

The morning after

The razzle

Dazzle

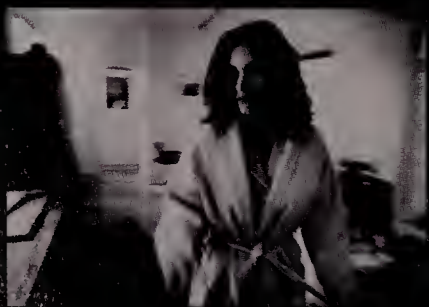
Patricia awoke to the sound of Howard Stern ranting through her clock radio. She had been crunching numbers all night, checking to see if the buy she just made was indeed the best way to reach her client's enterprise audience.

The glow from her laptop illuminated the powerful influence that led to her hasty decision. Ah, yes, the old Rep razzle dazzle. This time it was a plane ticket, a pack of golf balls and a pair of big red clown shoes for the "Circus of the Media Stars Golf Classic" in Palm Springs.

She examined the numbers again and realized that the sick feeling in her stomach wasn't caused by Howard Stern, but by the nagging questions over whether she made the most efficient combo buy to reach enterprise IT decision makers.

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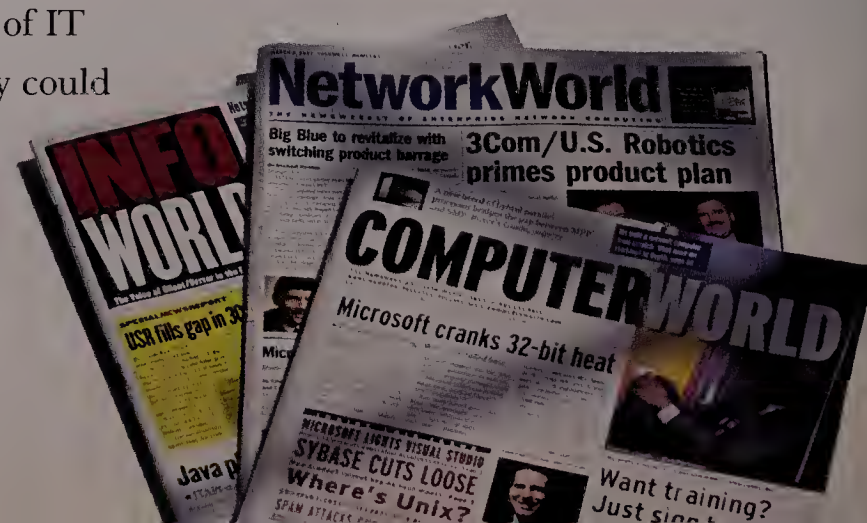


Swinging a three iron in red clown cleats was enticing. But it takes a lot more than that to persuade Patricia. Razzle dazzle or not, the Rep made a strong case for using his books to reach her target market. So she went for it. However, something still troubled Patricia.

That something was the buzz about IDG's EnterpriseWorld newsweekly media buy. Later that evening, after watching "Must See TV," Patricia did her usual exhaustive analysis. The results were compelling.

Now that IDG was uniting Computerworld, InfoWorld and Network World into a single media buy, her client could launch their new product to the widest, most influential group of IT professionals. And they could do it in the shortest amount of time.

(Patricia's saga continues on the inside back cover.)



NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Are cookies bad for you?

Privacy groups and electronic commerce proponents spar over plan to muzzle Web tracking tool.

By Chris Nerney

Privacy rights groups say it is a technology that can be used to secretly gather information about online users and track their activities as they surf the Web.

Advertisers and others promoting online commerce — including a consortium representing Internet service providers, online services, Webmasters and IS managers — say it provides valuable information to Web sites about their visitors and makes life easier for Internet users.

They're talking about Web browser "cookies" — a relatively simple technology that is at the center of a firestorm of debate over privacy rights and the Internet.

See Cookies, page 14

Bite into more cookie info online.

- A copy of the IETF's latest cookie proposal
- Articles on the privacy aspects of cookies
- How-tos and examples of cookie systems in action



Bay, 3Com at turning points

Bay CEO expected to detail back-to-basics rescue plan at NetWorld+Interop 97.



By Jim Duffy
Las Vegas

All eyes will be on Bay Networks, Inc.'s new Chairman, President and CEO David House next week as he climbs Mount Vegas to deliver the sermon of salvation for his down-trodden company.

Nobody expects House to smash stone tablets against roulette wheels or part the carpet of the Las Vegas Convention Center floor, but analysts and customers are hoping for something almost as dramatic from his address at NetWorld+Interop 97. House is expected to

See House, page 16

Recent developments have observers questioning the direction of 3Com's enterprise network product strategy.



By Jodi Cohen
Santa Clara, Calif.

3Com Corp. is by any count one of the heaviest hitters in the internetwork market. But a host of developments has industry insiders questioning whether the company has left itself vulnerable to attack — developments that customers and analysts hope the company will begin to address at NetWorld+Interop 97 next week.

The top three concerns:

- The super high-speed Layer 3 switches the company has promised will lag behind the delivery of competitors' offerings.
- The pending merger with

U.S. Robotics may signal a shift away from enterprise systems toward component-level products.

- The recent departure of

See 3Com, page 16

NETWORLD+INTEROP 97

Show preview stories inside

- Nuera to air voice over frame relay or IP product. Page 6.
- Start-up HyNEX to roll out low-cost ATM gear. Page 10.
- 56K bit/sec modems for corporate nets to make debut. Page 12.

Banyan bets big on Windows NT

By Christine Burns
Reno, Nev.

Now more than ever, die-hard Banyan Systems, Inc. VINES users say they are being forced to take a hard look at deploying Windows NT.

Banyan officials last week told

See Banyan, page 14

PANIC BUTTON?

Windows NT security flaw, the RedButton Bug, is unearthed; Microsoft reads a fix. Page 6.



Parasitic spammers prey on 'Net mail servers

By Paul McNamara

Spammers may be hijacking your company's Internet messaging server to launch their junk mail, making you both a victim and an unwitting accomplice, experts warn.

Not only can these culprits hog Simple Mail Transfer Protocol servers, but they have the potential to do even greater dam-

age. If the spam offends enough recipients and the corporate server host is blamed, a company can get a black eye.

In response to the problem, which has been particularly bothersome to Internet service providers and to universities, members of the Internet Mail Consortium (IMC) are proposing security extensions to

SMTP, which is by design a wide-open standard.

Vendors are also responding. For example, Ipswitch, Inc., of Lexington, Mass., this week will unveil an IMail Server for Windows NT upgrade that it claims will thwart parasitic spammers.

"Good spammers would not

See Spam, page 71

HOW THE SPAM SCAM WORKS



1. Target chosen

A spammer picks a company's domain name at random and then guesses the company's SMTP mail server host name. If the server will accept mail from the spammer, he then asks it to deliver a message to a list of addressees.

2. Spam launched

The server executes the request, creating the impression that the messages emanated from the victimized company's IP address.

3. Fallout ensues

Angry recipients complain to the victimized company or even block the company's employees from sending them any messages.



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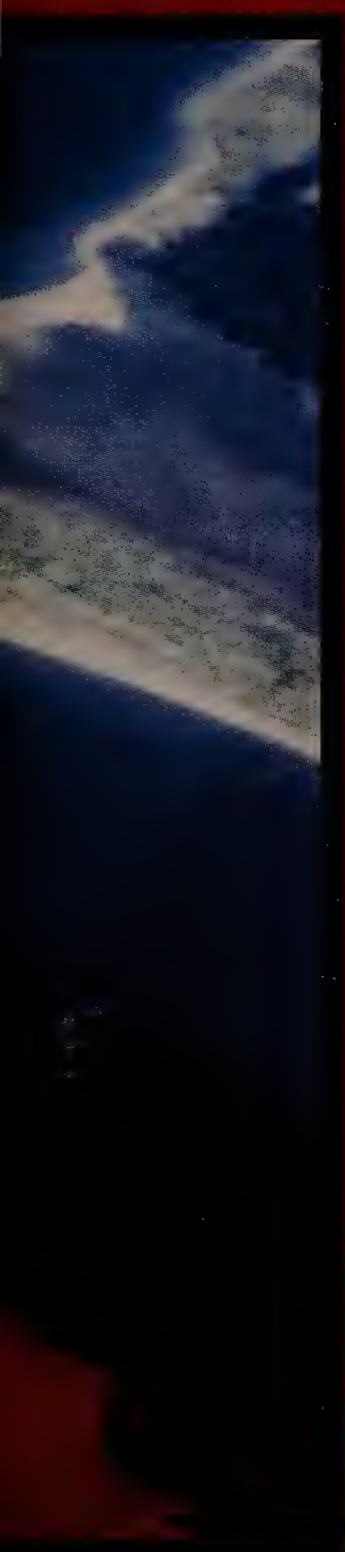
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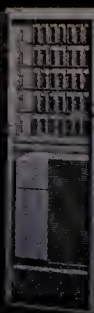
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WANT AN AQUANTA?

Some people say Windows NT can't handle enterprise applications — but not Unisys. The company is rolling out NT-based Aquanta servers that boast up to 10 200-MHz Pentium Pro processors. Page 29.

INTRODUCING HYNEX

The start-up is looking to make a big NetWorld+Interop 97 splash with its low-cost ATM access gear. Page 10.



JAWING ABOUT JAVA

The Java programming language is catching on, but JavaSoft President Alan Baratz says the company needs to do much more with server applications. Page 41.



FIND IT ON FUSION

To quickly get to any online info referenced in *Network World*, enter its DocFinder number in the input box on the home page.



This Week

Only on Fusion

- **Internet.** Last week, in a move that could bolster the Internet Ad Hoc Committee's plan to establish multiple domain registries, the National Science Foundation said it wants out of the domain registration business. Get exclusive details on the NSF's decision. **DocFinder: 1725**
- **Client/server.** PeopleSoft is planning a major revamp of its client/server tools this fall, including a three-tier version and Java integration. **DocFinder: 1726**
- **LANs.** Intel last week introduced a motherboard with a built-in Fast Ethernet processor, eliminating the need for a separate network interface card. **DocFinder: 1727**

From the front page

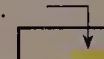
- **E-mail.** Read our page 1 story on how spammers are piggybacking on corporate SMTP servers. Then come online for links to a series of documents on how to block spam "relaying." **DocFinder: 1724**
- **The Industry.** After you've finished our articles on the futures of Bay Networks and 3Com, dig into the latest financial and stock news for the two companies. **DocFinders: 1723 (Bay) and 1722 (3Com)**

Review

- Grab complete benchmark test results — in Excel spreadsheets — for the four servers we review this week. **DocFinder: 1028**

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- 6 **Nuera now can send** voice over IP or frame relay.
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- 10 **Companies gear up** for NetWorld+Interop 97 with Gigabit Ethernet gear.
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- 12 **Vendors size up** 56K modem gear for corporate networks.
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Some unions just weren't meant to last. Page 74.

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PLANNING FOR GIGABIT ETHERNET:

A look at three implementation strategies shows why only two of them make sense. Page 49.

SERVER TEST SERIES: *We check out four workgroup workhorses: two from HP and one each from Digital and Micron. Page 54.*



News briefs, April 28, 1997

More permanent virtual circuits, please

■ MCI Communications Corp. last week changed its frame relay prices to encourage more mesh connectivity of sites and the use of dual high-speed permanent virtual circuits (PVC) in data centers for disaster recovery. MCI lowered the minimum usage charge on all its PVCs to \$5 per month, regardless of committed information rate (CIR), or rate at which packets cannot be dropped. This step should encourage users to establish dual PVCs with higher CIRs, with one PVC lying dormant until necessary, said Todd Bahner, an MCI frame relay product manager. However, the carrier compensated for the lower PVC usage charges by raising some of its port charges. The new prices take effect May 7.

Road map redux

■ The Desktop Management Task Force (DMTF) last week laid the groundwork for migrating its Desktop Management Interface (DMI) standard to a new object-based specification. The organization unveiled the DMTF Management Standards Evolution Roadmap, a blueprint for making DMI agents comply with the DMTF's Common Information Model (CIM), a schema for defining managed objects. CIM will replace the DMI data model, said Ed Arrington, DMTF chairman.

Push comes to shove

■ Push technology vendor PointCast, Inc. and search engine company Excite, Inc. last week announced an agreement to integrate several services. According to the deal, Excite will develop a searchable directory for PointCast's Connections channel. Excite also will become the default Internet search service for the PointCast Network.

Cisco shuffles the deck

■ Cisco Systems, Inc. last week tapped Selby Wellman to become senior vice president and general manager for its IBM Interworks Business Unit (IBU). Wellman ran the unit a couple of years ago and had been the acting IBU leader for a month. Wellman will be wearing more than one hat, however, as he also is now responsible for Cisco's worldwide marketing arm. Wellman's appointment was only part of a larger business reorganization Cisco undertook last week to streamline operations.



Cisco's Wellman

Layer 3 switching defined

■ The Multiprotocol Label Switching (MPLS) working group within the IETF has hammered out an architectural framework for defining Layer 3 switching standards, which will expedite definition of the standard, a Cisco Systems, Inc. spokesperson said last week. Cisco has been accused of trying to delay the MPLS standard (NW, Feb. 17, page 1). In addition to Cisco, the MPLS working group includes Bay Networks, Inc., Cascade Communications Corp. and IBM.

HP buy gets company into E-commerce game

■ Hewlett-Packard Co.'s proposed purchase of electronic payment systems maker VeriFone, Inc. has the potential to make HP a strong player in the electronic commerce market, observers said. HP last week said it would buy VeriFone in a one-to-one stock swap valued at \$1.18 billion. VeriFone, which had net revenue of \$472 million in fiscal 1996, would operate as a subsidiary of HP.

Building the backbone

■ Newbridge Networks Corp. this week will announce an ATM LAN backbone switch, which the company will show off at next week's NetWorld+Interop 97 show. The VIVID CS 3000 can support as many as 32 155M bit/sec ports and boasts a switching capacity of 6.4G bit/sec. The device supports the ATM Forum's Multi-Protocol over ATM standard to provide Layer 3 routing capabilities. Pricing for the switch starts at \$1,600 per port; the device will ship in September.

Windows NT security flaw uncovered

RedButton Bug lets intruders into NT's registry and file system; Microsoft readies a fix.

By Ellen Messmer

Microsoft Corp.'s Windows NT contains a serious flaw — dubbed the RedButton Bug — that allows remote users to gain unauthorized access to the operating system's registry and file system.

The security hole lets intruders log on to NT 3.51 and 4.0 machines without providing a user name or password.

Once in, intruders can read configuration files, peruse TCP/IP addresses and even learn passwords, according to Midwestern Commerce, Inc.'s NTsecurity.com division, the Columbus, Ohio, company that found the flaw.

"The registry is the ultimate storage [site] for all security in NT," said Andy Pozo, director of sales at NTsecurity.com, a security software and consulting services company. The RedButton Bug gives a hacker an administrative level of access over a computer to gain any information contained in the registry. The flaw can affect "even the type of screen saver you're using," Pozo said.

Microsoft acknowledged the flaw but denied that intruders can access end-user passwords.

The company this week plans

to issue an NT "enhancement" on its Web site that will prevent people from exploiting the security hole, said Mike Nash, director of product marketing at Microsoft.

"We had planned to eliminate [the RedButton Bug] in NT 5.0, but we've decided to make the [fix] available sooner," Nash said.

Network managers can test their NT machines for the flaw by running the free RedButton software posted on NTsecurity.com's Web site (www.ntsecurity.com).

NTsecurity is keeping the details about exploiting the flaw between itself and Microsoft.

However, David LeBlanc, an NT security engineer at Atlanta-based Internet Security Systems, Inc., said the RedButton Bug takes advantage of an NT access-level call referred to as a "null session" or "anonymous user."

Little is known about why Microsoft provides this category of user access privileges, he said.

"We knew you could use a null session to list the users in the machine," he said. "We didn't know you could use a null session to get the configuration information."

But the hacker community may have already figured it out. NTsecurity.com learned about the problem during its routine monitoring of hacker Usenet groups and Web sites over the past few weeks.

Still under debate is whether the NT security flaw affects applications running on NT machines.

"Microsoft Exchange [Version] 5.0 has the same user database, so [the RedButton Bug] might affect applications on NT machines," Pozo said. Nash, however, said he doubted applications could be touched by the bug. ■

NT MAKES ITS PRESENCE FELT

An NT security flaw could affect lots of companies. NT Server 3.51 and 4.0 accounted for about 27% of worldwide server operating system shipments last year, according to International Data Corp.

**Packet voice**

Nuera intros voice over frame relay and voice over IP in one device

By Tim Greene

Las Vegas

Nuera Communications, Inc. will soon become the first company to offer a device that lets users send voice traffic over either frame relay or IP networks, including the Internet.

The company's F200ip, which will be shown at NetWorld+Interop next week, builds on Nuera's existing voice-over-frame relay access device.

Packet voice promises to save users money by enabling them to put voice calls over existing data networks.

If there is enough capacity on the network, the voice can ride for free. The savings can be significant for long-distance and international toll calls — particu-

larly if a customer can transmit voice over dirt-cheap Internet links.

Nuera's device supports flexible dialing patterns that let users choose on a call-by-call basis whether calls go over the Internet or the frame relay network.

Alternatively, calls to individual phone numbers can be assigned to the IP or frame relay net.

The F200ip can also detect fax traffic, which is less time sensitive than voice, and transmit it at a lower cost over the Internet.

The frame relay/IP option also lets users avoid the bandwidth waste inherent in running IP over corporate frame relay networks.

With just IP voice as an

option, a voice bitstream would be encapsulated into IP packets.

Those packets would be wrapped in frames to move across the frame relay network. F200ip can eliminate the overhead of IP encapsulation, Nuera said.

The box also shapes traffic as it enters the wide-area link to minimize voice-packet delay.

The product fragments data packets and intersperses voice packets among them so the voice packets never get stuck behind mammoth blocks of data.

The F200ip supports T-1/E-1 links and a 10M bit/sec Ethernet port to connect it to LANs. It can support as many as 32 digital connections or eight analog connections.

The F200ip is in alpha trials and is scheduled to be available in the second half of this year.

The F200ip base model costs \$3,995. A four-channel digital card costs \$4,150.

A one-channel voice/fax card costs \$1,400.

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CISCO SYSTEMS



Fear grows that business users will be nailed by FCC decisions

By David Rohde
Washington, D.C.

Leading user groups last week warned their members that a big decision due from the Federal Communications Commission — one that was supposed to save users money — could wind up costing them big bucks instead.

Warnings went out after user groups and industry trade associations got wind of a plan, circu-

lated by FCC Chairman Reed Hundt, to impose a new monthly charge of as much as \$4.50 per business telephone line to help subsidize new telecommunications entitlements.

The new fee is part of a large draft proposal on changing the nation's access charge and universal service system. The full commission will vote on the draft next Tuesday. Universal ser-

vice currently guarantees basic phone service at reasonable rates to consumers. It is expanding to encompass online access at schools, libraries and non-profit health care organizations.

Attorneys for user groups have been bracing for increased business line charges, but hoped they would be offset by large decreases in per-minute access charges paid by long-distance carriers.

Now access charge reductions are likely to be too small to offset the looming fee increases, the attorneys said. The reason: Hundt's primary mission in next week's decision is to fund President Clinton's goal of connecting all elementary and secondary classrooms to the Internet.

And in recent congressional testimony, Hundt ruled out increases in residential fees to fund school and library subsidies called for in the telecom law, leaving the burden on carriers and business users.

The proposed new fee, called the Federal Equitable Recovery Charge (FERC), would be separate from the existing Subscriber Line Charge (SLC), which currently appears as a maximum \$6 per line item on business phone

bills. User groups warned that the business SLC may rise as high as \$9.50 per line to help fund expanded universal service.

Among the groups *Network World* confirmed sent warnings to their members last week were the American Petroleum Institute, the National Retail Federation, the International Communications Association and the Ad Hoc Telecommunications Users Committee.

Under the Telecommunications Act of 1996, the FCC must institute a new universal service system by next week — the 15-

month anniversary of the law's enactment. Some carriers have proposed alternate methods of funding universal service (see graphic).

Sources last week disagreed on whether the new FERC charge would be levied directly on users or charged to long-distance carriers. If charged to long-distance carriers, they would have to decide how much to pass along to users. "They won't eat it, you can count on that," said Bob Blau, vice president of regulatory affairs for BellSouth Corp. ■

Someone's gotta pay

Possible new and increased fees that users and carriers would have to pay as a result of expanded universal service:

Name of fee	Description	Current status	Possible future status
Subscriber Line Charge	Federally mandated since 1984 to compensate local exchange carriers for universal service	\$6 per business line, \$3.50 per residential and single-line business	Increase recommended by Universal Service Joint Board
Universal Service for America Fee	Special charge for getting schools and libraries online	Does not exist now	Proposed by AT&T, Bell Atlantic and NYNEX at 25 to 75 cents per line
Federal Equitable Recovery Charge	Charged to users or the long-distance carrier to which the line is presubscribed	Does not exist now	Proposed fee up to \$4.50 per business line and 75 cents per residential line; may be passed to customers by carriers

Users praise Oracle's Web Application Server

By John Cox
Redwood Shores, Calif.

The release this week of Oracle Corp.'s latest Internet application server gives corporate developers a powerful tool for building Web transaction systems, according to early users.

Users said Oracle Web Application Server (WAS) 3.0 dramatically eases the creation of applications. Users added that the product will scale to handle thousands of transactions per second and hundreds of thousands of users.

The new release includes Oracle's own object request broker (ORB), based on the Common Object Request Broker Architecture (CORBA) 2.0, so WAS components can run on different machines for better performance.

Oracle's approach is to use a Web server simply as an HTTP server that listens for browser requests. The HTTP server passes the requests to the WAS Web Request Broker, which dispatches them to applications called cartridges that execute

business rules or access databases. Thus, Oracle limits the Web server to what it does best — juggling HTTP requests — then offers a high-performance engine that runs application logic and uses the back-end database for transaction processing.

"We did extensive benchmarking with Oracle," said Sam Gerace, CEO of Be Free, Inc., a Pittsburgh vendor of Internet sales and marketing systems. "We can get 2,000 to 6,000 transactions per second. We'll need that for the Web sites we envision."

By relying on the proven transaction manager in the Oracle database, WAS 3.0 gives developers a solid basis for transaction applications and lets new Web applications work with existing Oracle data, he said.

Oracle's CORBA support in Release 3.0 will give Be Free and its clients the ability to add or change software objects much more quickly, introducing new services that browser users can access at once, Gerace said.

The CORBA ORB built into WAS 3.0 is essential to the development plans of Kinetoscope, a Tampa, Fla., Internet application builder.

The company is creating a Java agent framework that developers can use to build applications that roam the Internet sifting for information or triggering transactions.

"WAS 3.0 will let us make this framework truly distributed instead of writing a huge server-based Java component," said Gerry DeSeve, director of marketing and strategy for Kinetoscope.

One Kinetoscope project for a Florida power utility required handwritten Perl scripts.

"If we'd been able to use Web Application Server, we would have been able to do that almost instantly with no Perl scripting," DeSeve said.

WAS is available in two versions for Sun Solaris servers. The standard version is priced at \$995. The advanced version costs \$3,495.

© Oracle: (415) 506-7000

Cisco to unveil remote access extensions

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. this week will bolster the dial-up capabilities of its mid-range remote access servers with a number of enhancements.

The company will make software and hardware extensions to its 3600 series of dial access servers. Among the most significant upgrades is support for Cisco's Multichassis Multilink Protocol (MMP) software, which allows users to aggregate ISDN calls across access servers to increase bandwidth. Until now, MMP had been offered solely on Cisco's high-end AS5200 access server.

The Cisco 3600 series is targeted at regional and branch offices and small to midsize Internet service providers. It supports ISDN, synchronous/asynchronous and WAN connectivity up to T-1, and IP, IPX and AppleTalk routing. The series comprises the four-slot 3640 and the two-slot 3620.

In addition to increasing bandwidth and scalability, MMP increases the 3600's flexibility. For example, users will be able to aggregate multiple ISDN B channels among a mix of 3600s, AS5200s and Cisco routers with MMP.

Cisco's other software enhancements include features called Virtual Private Dial Network (VPDN) and Dialer Profiles.

VPDN uses a Cisco protocol called Layer 2 Forwarding to allow users from disparate net-

works secure access to their corporate net via the public network or the Internet.

Dialer Profiles enable network managers to create profiles for different classes of users dialing in on a single ISDN Primary Rate Interface line. This allows managers to give higher access priority to users that need it.

Hardware enhancements for the 3600 include a single-port

ENHANCEMENTS TO CISCO'S 3600 DIAL ACCESS SERVER

- Single-port Ethernet module
- 56K bit/sec WAN interface with integral DSU/CSU
- Multichassis Multilink Protocol
- Virtual Private Dial Network
- Dialer profiles

Ethernet module, dubbed NM-1E, and a four-wire WAN interface card with an integrated DSU/CSU. The Ethernet module features an Ethernet attachment unit interface and an RJ-45 connection and is the first single-port LAN module for the 3600 that does not include WAN ports.

The WAN interface card, WIC-1DSU-56K4, eliminates the requirement for external DSUs/CSUs. The card supports 56K bit/sec connections.

The software enhancements are included in Release 11.2 of Cisco's Internetwork Operating System. They are available now.

The NM-1E costs \$1,000 and the WIC-1DSU-56K4 costs \$700. Both are available now.

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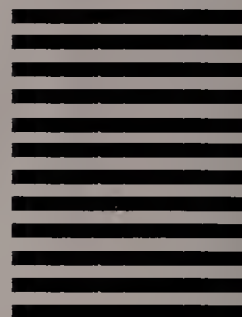
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Gigabit Ethernet just keeps on rolling along

By Jodi Cohen
Las Vegas

With the NetWorld+Interop 97 trade show right around the corner, it's no surprise that Gigabit Ethernet is the talk of the town.

The fast-advancing technology continued to build momentum last week as GigaLabs, Inc. rolled out a Gigabit Ethernet switch and Adaptec, Inc. unveiled a 1G bit/sec adapter card. Start-ups Packet Engines, Inc. and Prominet Corp. also took an early step toward quashing interoperability concerns about Gigabit Ethernet: The companies reported the successful completion of tests aimed at showing

that their products work together in customer networks.

GigaLabs bolstered its switch portfolio with the GigaStar 3000/S Gigabit Ethernet switch. The device allows customers to link servers, switches, disk storage systems, mainframes and supercomputers into one high-speed I/O switch.

The 16-slot chassis boasts a backplane capacity of 32G bit/sec and can support as many as 256 10M/100M bit/sec ports or 16 Gigabit Ethernet ports. The switch, which will be on display at Interop, supports GigaLabs' PCI-based GigaPipe technology for I/O connectivity at gigabit speeds (NW, Sept. 16,

1996, page 10).

Key features of the GigaStar 3000/S include gigabit multicasting, which allows a data stream to be broadcast to multiple users on a local or campus network simultaneously. The switch also offers Layer 3 IP switching, which provides intelligent routing functionality such as broadcast traffic filtering and packet forwarding at wire speeds.

The GigaStar 3000/S chassis is priced at \$20,000; the 16-port 10M/100M bit/sec Ethernet module costs \$700 per port; and the Gigabit Ethernet module is priced at \$2,495. All products will ship in May.

For its part, Adaptec unwrapped a Gigabit Ethernet adapter card designed for high-end servers. The ANA-69100 is a single-port 1G bit/sec Ethernet card for PCI-based machines.

The adapter supports half- and full-duplex operation as well as IEEE 802.1q virtual LANs and flow control. The device is being tested with Cisco Systems, Inc.

Pricing has not been set.

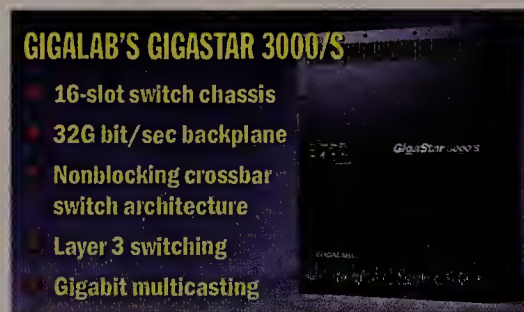
On the interoperability front, Packet Engines and Prominet said they have successfully transmitted and received packets in joint tests of their Gigabit Ethernet products.

The tests involved Prominet's P550 Cajun Switch and Packet Engines' 64-bit PCI Gigabit Ethernet card, the G-NIC.

Analysts said the testing is significant because it demonstrates that pre-standard Gigabit Ethernet products from different companies can work together.

The Gigabit Ethernet standard, which is being developed by the IEEE 802.3z committee, is expected to be completed in early 1998.

© GigaLabs: (408) 481-3030; Adaptec: (408) 945-8600; Packet Engines: (509) 922-9190; Prominet: (508) 870-5570



products for interoperability, Adaptec said.

The adapter will be available in sample quantities to server manufacturers in late summer.

ATM switching

Start-up takes aim at ATM switch market

By Jodi Cohen
Haifa, Israel

Ever heard of HyNEX, Ltd.? Well, you are about to. The ATM switch company is set to make its debut at next week's NetWorld+Interop 97 show, and its focus is low-cost ATM access products.

Actually, the privately held start-up is not a complete secret: Switch vendors FORE Systems, Inc. and Madge Networks, Inc. have been quietly reselling an Ethernet-to-ATM switch from HyNEX for about a year.

PROFILE: HyNEX, Ltd.

Founded: 1995

Based: Haifa, Israel

Key products: ATM switches and access gear

Employees: 30

HyNEX will unveil two products: the HL8600, an ATM switch with integrated Ethernet or Fast Ethernet switch ports and the HL8400, an ATM-to-FDDI access switch. The new products will be on display at Interop's Start-up City.

The HL8600 Mezzanine ATM switch, connects local workgroup Ethernet and Fast Ethernet segments to an ATM backbone while also serving as an ATM switch.

The HL8600 switch, which operates at wire speed, provides five 155M bit/sec ATM ports and 16 switched 10M bit/sec or two 100M bit/sec Ethernet ports. An internal 155M bit/sec ATM port provides ATM connectivity for switched Ethernet and Fast Ethernet access.

In large networks, the HL8600 — which can be stacked up to five units high — fits between a backbone ATM switch and LAN access devices. The HL8600 allows customers to increase the number of ATM connections at a lower price point by stacking additional boxes, according to Ron Shani, director of special accounts at HyNEX.

Few competitors offer this type of ATM and Ethernet switch combination, industry observers said. And vendors that do, such as Bay Networks, Inc., provide a chassis-based product that is much more expensive.

For example, HyNEX's HL8600 switch with five 155M bit/sec ATM ports and 16 Ethernet ports costs \$12,850. A similarly configured Bay Centillion 100 costs more than twice as much.

Customers would need to purchase two of Bay's EtherSpeed eight-port Ethernet modules, priced at \$6,995 each, an ATMSpeed four-port 155M bit/sec ATM module priced at \$8,995 and the Centillion 100 switch chassis that costs \$1,995,

according to Bay.

Besides the pricing, the HL8600 offers some interesting features, such as rate queues, which let customers control the rate that each bit flows across permanent virtual circuits and



HyNEX's HL8600

switched virtual circuits.

The HL8600 allows the creation of Ethernet virtual LANs that extend across the ATM net, using ATM Forum standards such as LAN Emulation. The switch will ship in August.

HyNEX also will unveil an ATM-to-FDDI access switch. Called the HL8400, the two-port device is designed for FDDI sites moving to ATM and for ATM users that wish to connect to an FDDI backbone.

The ATM uplink operates at 155M bit/sec, offering multi-mode for short distance and single-mode for long distance. The HL8400 features an optional redundant ATM uplink, providing similar redundancy qualities found in FDDI nets.

The HL8400 will cost \$9,950 and will ship in June.

© HyNEX: (011) 972-3-921-1423

FTP assigns its agents to manage IP networks

By Michael Cooney
North Andover, Mass.

At NetWorld+Interop 97 next week, FTP Software, Inc. will introduce a family of software agents designed to help users manage their TCP/IP networks.

The company's Software Agent Applications are Java-based components that will automatically collect information about IP-based hardware and systems software — including configuration data — and distribute software updates across a network.

"The idea is to reduce administration costs and simplify the management of TCP/IP environments by automatically performing tasks that today require manual intervention," said Christopher Vasko, product-line manager for FTP Software.

The FTP offerings include the Agent Manager console and Agent Responder.

The console can reside on any workstation and gather or distribute information to clients running the Agent Responder. Information gathered by the Agent Manager console can be stored on any SQL-based database.

Today, the Agent Responder is embedded in FTP's TCP/IP-based Network Access Suite and IBM's eNetwork Commu-

nications Suite, but Agent Responder will work on other vendors' TCP/IP stacks as well.

Along with the agents, FTP's IP Auditor and IP Distributor software will let users collect network connectivity information, monitor for security holes, manage IP addresses and distribute software.

From the Manager, IP Auditor can send a request to all Responders to gather inventory and configuration information. Armed with the data, users can target software downloads to specific machines.

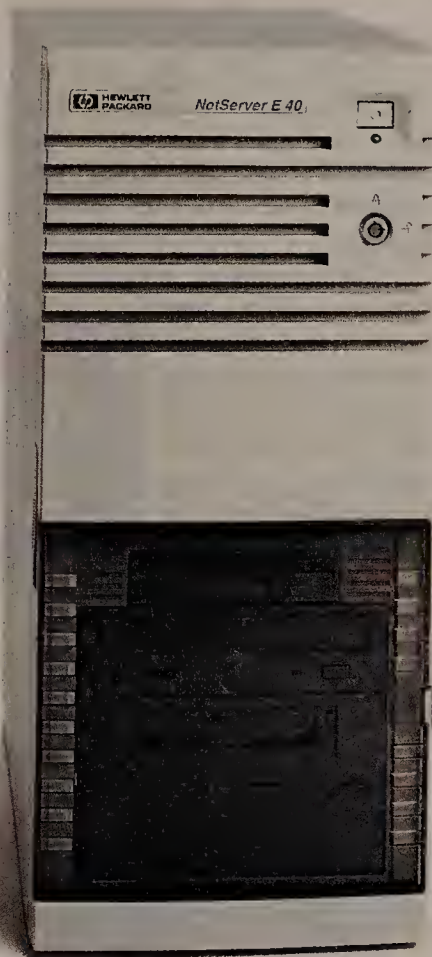
Vasko said the new FTP agents differ from the SNMP agents that populate many TCP/IP environments today. SNMP agents are device-dependent, event-driven and nonintelligent, he said. FTP's agents can be moved around a network and gather information from multiple devices.

Vasko added that FTP's agents could work with existing SNMP agents to provide additional real-time status data or other network information to the SNMP system.

FTP's IP Auditor and IP Distributor will be available in June.

While pricing has not been set, Vasko said the applications will cost between \$25 and \$50 per seat.

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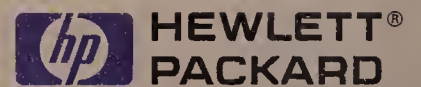
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Network computers

IBM makes thin clients easier to administer

Network Station Manager lets administrators define NC user access to server-based applications and data.

By John Cox
Somers, N.Y.

IBM last week released software that lets network administrators define network computer (NC) user access to server-based applications.

The new software, called Network Station Manager, resides on a server and contains services

loaded for free by existing customers from www.ibm.com/nc. The software will be available in CD-ROM versions next month.

Initially, Network Station Manager will run only on the AS/400. By year-end, IBM will roll out mainframe, Windows NT and Unix versions.

The IBM Network Station Manager and the IBM Network Station Browser comply with the Network Computer Reference Profile.

The profile is sponsored by Oracle Corp.'s Network Computer, Inc. subsidiary and other vendors, including IBM, to make it easier for NCs

to operate with one another and other systems.

Later this quarter, IBM will release the Navio NC Navigator, a customized version of Netscape's Navigator 3.0 for NCs.

© IBM: (800) 426-2255

IBM SERVES UP NETWORK COMPUTERS

IBM has released server software that configures and manages its thin client, the Network Station (shown here). Managers access the software via a Web browser.



such as terminal emulation and Java applet storage.

Net administrators access the software via a Web browser. Administrators then graphically configure NC user profiles that define the services a user can access, such as server-based files and applications, including Windows applications.

Beta site Wisconsin Indianhead Technical College in Shell Lake, has installed the new software on an AS/400 server to support five very different end users, each of which has an IBM Network Station NC.

"We customized each device [using the software]," said Ray Peterson, information systems specialist with the college's IS group.

The server software was stable and the browser interface was extremely easy to use, Peterson said. "We hardly read the manuals at all," he added.

Peterson also said the only missing ingredients were compact Java applications for word processing, E-mail and scheduling.

For this, the college will evaluate the Java-based Kona suite from Lotus Development Corp. "We have to have a complete package [of applications] in order to make this thin-client approach successful," Peterson said.

The Network Station Manager and the companion Web browser, called the Network Station Browser, can be down-

56K modems for the corporate net

By Tim Greene

Vendors of 56K bit/sec modems have finally realized that you might want to use fast modems to call somebody besides your Internet service provider.

Using modems at top speed requires that one party be connected directly to the phone company by a digital link. But so far, access hardware vendors have focused on rigging their digital-end 56K bit/sec gear for carrier-size ISP networks.

Now three vendors—Ascend Communications, Inc., Ariel Corp. and Xyplex Networks, Inc. are introducing corporate 56K bit/sec products at NetWorld+Interop 97.

The 56K bit/sec modems promise users faster download times, shorter connect times and a less expensive alternative to ISDN, according to Greg Howard, an analyst with Infonetics Research, Inc. in San Jose, Calif.

Because most corporate sites have a digital connection, they can support 56K bit/sec technology for analog dial-up users. But

the modems' top speed is only attainable from the digitally connected end to the analog-connected terminal. Most ISPs already had digital modems in their networks, so vendors targeted them first.

But the vendors' strategy is changing.

Ascend is introducing MAX 2012 and MAX 2024, two versions of the same two-slot chassis.

The 2012 supports a single 12-modem card that can be fed by a fractional T-1 line.

The 2024 holds two cards and can support a full T-1 or a Primary Rate Interface ISDN line.

The MAX gear supports IP, IPX and AppleTalk protocols. In addition, the access boxes include Remote Networking Software that supports dial-in, dial-out capabilities and establishes the remote user as a node on the corporate LAN.

Ascend's Secure Access Firewall is also bundled into the package.

As an option, Ascend offers Hybrid Access 2000, which

allows the platform to receive Basic Rate Interface ISDN calls and analog modem calls.

The 2012 costs \$8,400 and the 2024 costs \$13,920. PRI signaling software costs \$1,000 per system and enabling ISDN dial-up is priced at \$1,500.

Ariel is introducing RASCAL RS1000, a shrink-wrapped hardware package for the Windows NT Server platform that integrates 24 56K bit/sec modems on a pair of ISA bus cards. The boards support a PRI or a T-1 interface.

Installed in an existing network server, the cards can give the server remote access functionality.

RASCAL costs \$9,600 and will be available in the third quarter. Beta versions are available now.

Xyplex has plans to incorporate up to 64 56K bit/sec modems into its new EdgeBlaster remote access server through a partnership with modem maker Microcom, Inc.

EdgeBlaster will be available in the second half of this year. Pricing starts at \$6,000.

Ascend: (510) 769-6001; Ariel: (609) 860-2900; Xyplex: (508) 952-4700



Axent software provides for single network sign-on

By Ellen Messmer
Rockville, Md.

Axent Technologies, Inc. today will ship OmniGuard/Enterprise Resource Manager (ERM) 2.1, which lets companies establish a single sign-on system for users.

The product enables an administrator to set up an Enterprise Security server that defines user access privileges to a variety of resources. Such resources include mainframes, Windows NT and NetWare servers, Netscape Communications Corp. Web servers and Banyan Systems, Inc. VINES LANs.

With ERM, users only have to log on to the network once using a single password or other means of identification, such as token-based authentication or Kerberos-based security.

That would be a big plus for end users, who currently must remember multiple passwords for different machines and applications.

ERM comprises modules that work together to achieve single sign-on functionality.

The product enables an administrator to set up an Enterprise Security server that defines user access privileges to a variety of resources.

User information is stored in the ERM directory, which is based on Banyan's StreetTalk directory. The next version of the directory will be based on the Lightweight Directory Access Protocol.

By the end of the year, Axent plans to add a module that provides access to Oracle Corp. and Sybase, Inc. databases.

"We'll also have one for Lotus [Development Corp.] Notes," said Brett Jackson, Axent's senior vice president of sales and marketing.

© Axent: (301) 670-3510

Industry's brightest stars to test brainpower

How did Novell, Inc. get its name?
What was the name of Sandra Bullock's character in the 1996 flop "The Net?"
What product had the code name Hermes?

If you think you know the answers to these questions, or wish you did, don't miss the first Net Bowl competition, to be held at NetWorld+Interop 97 in Las Vegas next week. The event takes place at 6:30 p.m., Wednesday, May 7, in the Las Vegas Hilton's Barron Room.

The Net Bowl will pit East and West Coast network industry leaders against each other in what promises to be a fun and educational trivia contest. Panelists include Novell's new CEO Eric Schmidt, FORE Systems, Inc. CEO Eric Cooper and Shiva Corp. CEO Frank Ingari.

Attendees will receive complimentary food and beverages as well as a Net Bowl bag and trivia book. There also will be raffles with prizes, including a U.S. Robotics Pilot PDA. A \$10 donation will be collected at the door.

All proceeds will benefit the NetDay 2000 project, a national grassroots effort to network underfunded schools' computers and connect them to the Internet by the year 2000.

The event is sponsored by Network World, IntraNet, NetWorld+Interop 97, ADC Kentrox, Cabletron Systems, Inc., Eicon Technology Corp., Progressive Networks, Inc. and Visitel Convention TV.

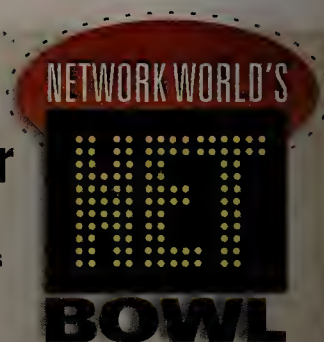
For more information, contact Network World's Joanne Wittren at (508) 820-7432.



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Banyan

Continued from page 1

the 500 VINES customers attending the Enterprise Networking Association conference here that the software company's survival is predicated on Banyan's ability to blend its offerings with NT and standard Internet technologies.

"There used to be so much excitement about VINES here," said Lindsay Jones, a network specialist with a West Coast utility company that has started to mix NT into its 375-server VINES network. "But now it's looking more like NT's the only game in town."

In his first speech to customers, new Banyan CEO William Ferry said financial stabilization is his top priority for the com-

pany, which just announced a first-quarter loss of \$6.5 million and plans to reduce its workforce by 20% to 25%.

Ferry promised improved financials by year-end and said better NT-to-VINES integration is key to revenue and earnings growth.

As evidence that it has an NT product strategy, the company detailed plans for a new version of StreetTalk for NT, Banyan's directory service that runs natively on NT.

StreetTalk for NT 7.5 will ship next month with enhanced administration utilities, support for Windows 95 and NT user profiles and system policies, and the latest release of Banyan's Intelligent Messaging 4.0 software.

Banyan officials also disclosed

that the company's Lightweight Directory Access Protocol (LDAP) software will first be delivered as an add-on to Street-

Talk for NT. This tool will allow LDAP-compliant clients and applications access to StreetTalk information stored on VINES

servers, if a StreetTalk for NT server is on the network. The product will ship by year-end.

LDAP will also provide connectivity between StreetTalk and Microsoft Corp.'s Active Directory, which is expected to ship with NT 5.0 next year. In addition, Banyan articulated an intranet strategy based on two new Web products that require a StreetTalk for NT server running Microsoft's Internet Information Server (see related story, this page).



Cookies

Continued from page 1

Amid growing concern about how Web site operators will use data collected by cookies, the Internet Engineering Task Force (IETF) is proposing a change in the technology that would make it easier for users to block the cookies.

The change, warned the Association of Online Professionals (AOP) — one organization opposing the IETF's draft standard — would "necessitate major reprogramming of sites across the Internet," according to a letter the group sent to the IETF last week.

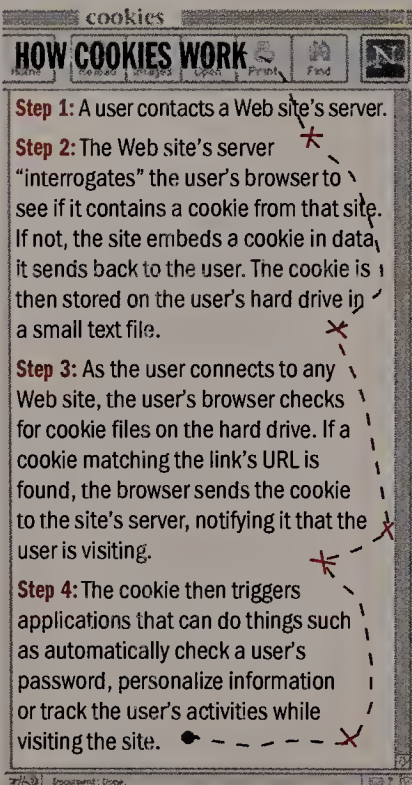
Cookies are small text files that Web site servers plant in users' computers, usually without the user's knowledge (see graphic). They contain information about the user, such as a password or preferences, that the Web site can access whenever the person contacts that site's server.

Cookies are being used by more and more Web sites to perform many useful functions. Search engines such as My Yahoo use cookies to customize information retrieval. Web sites use them to tailor the presentation of pages for individual users. Subscription Web sites use cookies to store registration data, allowing subscribers to enter without having to type in their password each time.

And cookies also are being employed by online advertising agencies to monitor users' movements over the 'Net.

Companies such as DoubleClick and NetGravity, Inc. use cookies to compile information

about users based on their Web activities. This gives advertising clients an opportunity to deliver targeted online ads; however, it also alarms Internet privacy advocates.



The IETF's proposal, RFC 2109, would restrict the anonymous nature of cookies and let users decide which cookies their computers would accept or whether to accept them at all.

The latest browsers from Netscape Communications Corp., which invented cookies, and Microsoft Corp. will notify users if a site wants to send them cookies, but only if users reconfigure their browsers to activate this function.

The IETF plan would reverse the browser's default. Users automatically would be notified of requests to send cookies and could accept or reject them.

Ten organizations, including the Electronic Privacy Information Center (EPIC) and the Electronic Frontier Foundation, recently sent a letter to the IETF supporting RFC 2109.

EPIC Director Marc Rotenberg says "transparency" — users' ability to see and control cookies — is essential.

"We're not so much anti-cookies. We're against the lack of transparency in cookie transactions," Rotenberg says. "We don't think cookies should be used for profiling users."

AOP Executive Director Dave McClure disagrees, arguing that gleaning user preferences is critical to the success of electronic commerce.

"We're very sympathetic," McClure says. "But the proposal to alter the default would cause widespread confusion and would not offer substantially more privacy."

Despite pressure from advertisers and other commercial interests, one of the RFC's co-authors says there are no plans to revise the proposal.

"After talking to the advertisers, I got a much better appreciation of how they're using the information, and it's pretty clever," says Dave Kristol, a Bell Labs technical staff member. "There's potential for abuse."

Kristol says online advertising agencies such as DoubleClick will not only send a cookie from the Web site a user is visiting, they also will transmit cookies from other DoubleClick clients. This is the equivalent of direct marketers sharing customer lists. "This is where the advertisers and I have crossed swords," he says. ■

While Banyan clearly is enamored of NT, the company is spending an equal amount of development dollars on VINES, said Jeff Bernard, director of strategic marketing. "We will support VINES as long as it is a viable platform for our customers," he said.

Before year-end, Banyan will ship a VINES upgrade that includes expanded symmetric multiprocessing capabilities, improved Network Driver Interface Specification support and directory features that parallel those in StreetTalk for NT 7.5.

"We may not be giving people a laundry list for new VINES features, but the fact is all of these new applications that we are talking about add value to the VINES networks that are out there," said Eugene Lee, vice president of marketing at Banyan.

Users had mixed reactions to Banyan's NT push.

"NT is the writing on the wall, and it has advantages. Otherwise, we wouldn't be looking at it," said Dave Bradley, a network technician with the U.S. Marine Corp.'s Air/Ground Combat Center in 29 Palms, Calif. "But it's the [StreetTalk] integration that gives me the comfort level I am used to for managing users and network objects."

Another user expressed concern about Banyan's require-

ment that NT exist in VINES nets. "I chose VINES because it is a strong base to build on," said Sukhdev Sidho, a communication specialist with a Canadian government agency. "Banyan is now building on a platform — even requiring it sometimes — that I will have to go back to and

Banyan's Windows NT story

- **October 1996:** Shipped StreetTalk for NT 7.0.
- **May 1997:** Plans to ship StreetTalk for NT 7.5.
- **Summer 1997:** Plans to roll out Web access for StreetTalk and introduce WebGuard for securing Web site content.
- **Late 1997:** Due to ship LDAP Connector for StreetTalk for NT.
- **1998:** Intends to link StreetTalk for NT with NT 5.0 directory.

reboot once a week. I'm not comfortable with that instability."

Other members of the VINES community have bought into Banyan's plan. "This NT focus is going to be Banyan's savior," said one Latin American VINES distributor who requested anonymity. "The world is going to NT regardless of any technology advantage Banyan has had in the past." ■

Banyan readying Web wares

Banyan Systems, Inc. last week previewed two Web-enabled products that work with its StreetTalk directory service.

"We are helping customers open up their networks to the Web, based on what they already have in place, namely our StreetTalk directory service," said Eugene Lee, Banyan's vice president of marketing.

The first product, code-named Yoda, provides access to StreetTalk resources via a Web browser. This software, which sits on a server also running StreetTalk for NT and Microsoft Corp.'s Internet Information Server (IIS), offers up an HTML-based StreetTalk log on page to the browser user. From this page, users can employ the same StreetTalk identification code and password they would use on a local VINES client machine.

"I'll buy this as soon as it hits the market, if not before," said Robert Whelan, assistant director of network services at Northeastern University in Boston. He said Yoda would enable remote end users with Web browsers to dial in to the university's VINES network via the Internet rather than through a large modem bank that is expensive for the university to maintain.

The second Banyan Web product, code-named WebGuard, lets an administrator define access to Web sites and sections of Web sites based on StreetTalk directory user IDs. The product consists of a component that sits on an NT server running IIS as well as software that plugs into Microsoft's Internet Explorer or Netscape Navigator. The browser plug-ins include StreetTalk authentication information that grants end users Web site access.

Yoda and WebGuard are expected to be available this summer.

— Christine Burns



Banyan's Lee

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3Com

Continued from page 1

Robert Finocchio, president of 3Com's systems division, may be indicative of trouble in the executive suite.

As for the first concern, 3Com has publicly admitted it will not

ship wire-speed Layer 3 switching—one of the hottest technologies on the horizon—until mid-1998. That is a couple of quarters behind most of 3Com's competitors, one analyst said.

"[3Com] is going to be at least six months behind most of the other internetwork vendors in offering very high-performance Layer 3 forwarding," said Nick Lippis, principal at Strategic Networks Consulting, Inc. in Rockland, Mass. "3Com will pre-announce product—a sign of vulnerability—in order to stall the market from going to their competitors."

And preannounce it has. 3Com recently primed customers for a device that provides wire-speed multiprotocol routing in excess of 30M packet/sec, (NW, April 7, page 10). But the product will not ship until the middle of 1998, according to 3Com.

In the meantime, many Gigabit Ethernet start-ups, such as Extreme Networks, Foundry Networks, Inc., Prominet Corp. and Rapid City Communications, Inc., plan to step in and deliver high-performance Layer 3 switches this summer. Likewise, larger competitors Bay Networks, Inc., Cabletron Systems, Inc. and Cisco Systems, Inc. all appear ready to ship similar products by the third quarter.

3Com's Janice Roberts, senior vice president of marketing, defended 3Com's timing.

"It's important for us to develop great products with a fast time to market, but at the same time, customers will wait a little bit for the latest, greatest products if they think you're the best company to deal with," she said.

One analyst agreed and said 3Com does not need to rush Layer 3 gear out the door. "Cus-

tomers are now frowning on it. 3Com's stock has plummeted from about \$78 a share on Dec. 10, 1996, to a 29-day low of \$24 last Tuesday. Revenue fell short of estimates in the fiscal third quarter ending in February when the company announced revenue of \$787 million, compared with San Francisco-based investment firm Montgomery Securities' estimate of \$850 million.

Heavenly marriage?

What about the combination of 3Com and U.S. Robotics? Once the deal goes through this summer, 60% of the combined company's revenue will come from components such as network interface cards (NIC) and modems,

according to 3Com.

"Companies start to act based upon where their revenues come from, so 3Com will spend a lot of time focusing on channels and commodity products," Lippis said. "Can they do that as well as be a major player in enterprise systems sales? They definitely have a big challenge [ahead]."

But Silva pointed out that 40% of 3Com's revenue currently comes from NICs, and not too long ago it was more than 50%. "So it's not really an issue," she said.

3Com's strength is—and always has been—in the work-

group, where the vendor is the top market shareholder. And now 3Com is becoming a significant force in the small office/home office market, as well.

One analyst said he does not think 3Com will have a problem balancing its resources. "[3Com] is big enough to focus and succeed in both the commodity and enterprise business segments," said Don Miller, chief analyst of networking services at Dataquest, Inc. in San Jose, Calif.

3Com's Roberts agreed and said the two businesses are linked. "We can provide more network manageability for customers by putting intelligence in software into NICs, modems and other network access points," she said.

"For 3Com to take its eye off the systems business ball would be catastrophic," Miller said. "They need to deliver on the strategy that they've begun to lay out."

But that could be more difficult now that Finocchio is gone. The top executive has been credited with integrating the numerous companies 3Com has acquired over the years.

Yet Roberts assured the industry of 3Com's enterprise commitment. "We're not taking our eye off the ball in terms of being a systems company at all," she said. "If you know [3Com CEO] Eric Benhamou, you know that he's Mr. Systems." ■

3COM'S ENTERPRISE FOCUS SHOWS POSSIBLE SIGNS OF FADING

- Expected to ship wire-speed Layer 3 gear late.
- 3Com/U.S. Robotics merger could lead to an increased focus on components rather than enterprise products.
- Recent departure of Robert Finocchio, president of



3Com's systems division, who was responsible for all aspects of developing, marketing and manufacturing 3Com's routers, switches, hubs, remote access platforms and network management.

tomers aren't going to be using Layer 3 as soon as people think," said Esmerelda Silva, an analyst at International Data Corp., a market research firm in Framingham, Mass. "Moving to Layer 3 switching and swapping out routers is going to be incremental."

However, 3Com was slow to deliver Fast Ethernet gear last year, and as a result, the switching division lost about 30% in market share almost exclusively to Cisco's Catalyst 5000, Lippis said.

Although the company was once a Wall Street darling, inves-

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Associate Features Editor: Susan Collins,
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REVIEWS

Test Center Director: Lee Schlesinger
Phone: (508) 820-7416
Director, Network World/PC World Server Test Center:
William Rinko-Gay
Phone: (713) 376-8771; Fax: (713) 251-7857;
E-mail: bill_rinko-gay@pcworld.com
Test Alliance Partners: Todd Cooper, Trinity College;
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Executive Editor: Beth Schultz, Phone: (773) 283-0213, Fax: (773) 283-0214
Senior Editor: Peggy Walt, Phone: (415) 903-9519,
Fax: (415) 968-3459
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House

Continued from page 1

disclose his plan for resurrecting Bay from the networking dead and leading its ascension to a better place.

But instead of miracles, observers expect House to lay out something more mundane—a back-to-basics strategy with the promise of better execution than his predecessors.

"It's probably counterproductive to get everybody thinking that something exciting is going to happen," said Thomas Nolle, president of CIMI Corp. in Voorhees, N.J.

By the time he delivers Bay's road map next week, House—who took on leadership of the company last fall—will have had six months to size up Bay and its customers. As a result, Bay spokespeople are promising a talk rich in product, technology and business specifics.

House succeeds Paul Severino as chairman and Andrew Ludwick as president and CEO,

the executives blamed for allowing Bay to flounder after the company was formed through the merger of Wellfleet Communications, Inc. and SynOptics Communications Corp.

"Unless [Bay does] something surprising, I expect [the company] to focus on switching," said Craig Johnson, director and principal analyst at Current Analysis in Herndon, Va.

Johnson also said he expects House to say Bay will focus on the corporate market, one of its traditional

strengths, and will leverage the 10M/100M bit/sec autosensing Ethernet technology it acquired with NetICs, Inc. to drive down the cost of Bay's switches.

Lynn DeNoia, director of consulting services at Strategic Networks Consulting, Inc. in Rockland, Mass., said Bay needs to capitalize on its routing expertise. Developments such as its Switch Node Layer 3 switch are a

good start, she said. Switch Node is a five-slot campus backbone switch that can learn Layer 3 forwarding information.

Bay also has to work on clarifying its marketing message, DeNoia said. There, the company has a leg up with a catchy moniker: Adaptive Networking.

"I'd like to hear them say that they're going to have a single, cohesive story with integrated products that people will have a good idea where to [deploy]," DeNoia said. "To me, that's been one of the biggest [areas of] confusion. Their products overlap; it's not clear why I would use one vs. another."

But analysts do not want to see House repeat the Paul and Andy show of three years ago, when Severino and Ludwick delivered a detail-deprived monologue on the merits of their union on a steamy Atlanta night (NW, Sept. 19, 1994, page 1).



Bay's House: After six months, a plan.

"They've worried more about protecting their installed base than they have about evangelizing new markets and new opportunities," CIMI's Nolle said. That may be with good reason because 35% of Bay's port shipments are still for shared-media LANs, Johnson said.

"What they need to do now is put a stake in the ground, not in a concept sense but in a product and technology sense," Nolle said. "It's hard for me to believe that they have one."

House and Bay need that technological stand to be credible, said Don Miller, chief analyst for networking services at Dataquest, Inc. Bombastic "motherhood and apple pie" speeches about being standards based, evolutionary, simple and low cost will not cut it this time, he said.

"Adaptive Networking is the new marketecture," Miller said. "The question is: Where's the beef?"

Bay claims Adaptive Networking will have plenty of beef. ■

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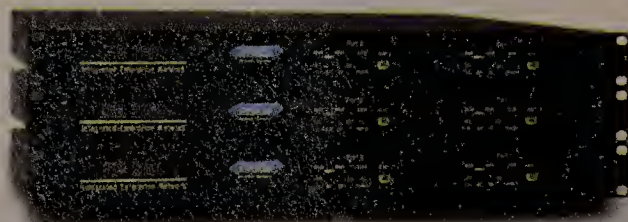
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Briefs

■ **Motorola, Inc.'s Network Systems Division** last week boosted multimedia support in its router and frame relay access devices (FRAD). The company announced **RemoteVu** for the Vanguard FRAD family, which will allow full-motion video from remote sites over bandwidth as



low as 2.4K bit/sec. The RemoteVu package includes a video daughtercard, which fits inside the Vanguard FRAD, and Windows 95 and NT-based software for controlling remote cameras. It will be available in June and cost \$895.

For Motorola's Vanguard and MPRouter, the company added videoconferencing software that lets users set up videoconferences over frame relay nets.

The software enables any High-level Data Link Control-based constant bit rate video applications to be transported on the same frame relay service at data rates up to 1.5M bit/sec.

The package will be available on Vanguard and MPRouter in May.

© Motorola: (508) 261-4000

■ **Wireless routers** will be the rage next month. On May 12, **Cylink Corp.** will announce its **Cylink DataMetro Wireless Internet Protocol router**, which will let network managers link LANs at distances of up to 100 miles. Wireless routers and bridges typically limit users connecting LANs up to 30 miles apart. DataMetro will cost \$2,995 for a 320K bit/sec router and \$3,995 for a 1.28M bit/sec router.

Meanwhile, **Multipoint Networks, Inc.** is expected to announce its **WaveNet IP wireless router** at NetWorld+Interop 97. Multipoint's router is limited to campus environments with LANs 10 miles apart. When it becomes available in July, the router is expected to cost between \$2,100 and \$2,500.

© Cylink: (408) 735-5800; Multipoint: (415) 595-3300

Vendors battling over host-to-Web access market

WRQ, Attachmate latest entries into growing market.

By Michael Cooney
Seattle

The field of vendors racing to link the SNA world with the Internet is getting crowded.

Case in point: SNA connectivity merchants WRQ, Inc. and Attachmate Corp. recently unveiled plans for software packages that will let users access applications on IBM mainframes or AS/400s as well as Unix and Digital Equipment Corp.-based servers over the Internet.

Web-to-host products are growing in popularity because browsers, Web servers and other Internet access goods typically are easier to install, configure and maintain than traditional SNA or host emulation software. Applications theoretically can be added and changed on a Web server without having to change client code, a traditional stumbling block in the legacy world.

Most SNA connectivity vendors are looking to grab a piece of the Web-to-host access pie. IBM, White Pine Software, Inc., Wall Data, Inc., Teubner & Associates, Inc., OpenConnect Systems, Inc., Apertus Technologies, Inc. and others have announced SNA-to-Internet access products in the past year.

"Users would like to see some second-generation features from these vendors, such as file-transfer and printing support," said Anura Guruge, an independent analyst in New Ipswich, N.H. OpenConnect and Apertus are among the vendors offering some advanced features.

WRQ's entry includes a new Java-based version of its Reflection TCP/IP connectivity software. The Reflection applet will run on a Web server and connect any browser-based client to an IBM mainframe or AS/400, or to Digital, Hewlett-Packard Co. and other Unix-based hosts.

By downloading the applet, users can access multiple hosts simultaneously and cut and paste among applications. Once the session is complete, the Reflection applet is returned to the server.

WRQ is also working on a Reflection applet for the ActiveX environment.

"Since the package resides on the server, users don't have to update every desktop when

said Tim Winston, product manager at WRQ. "Since we are not an HTML conversion gateway, we support local printing."

The Java-based Reflection applet will be available in June.

Pricing has not been set.

Meanwhile, Attachmate announced its Extra HostView Server package, which provides SNA 3270 access to browser-based clients using Java or ActiveX controls.

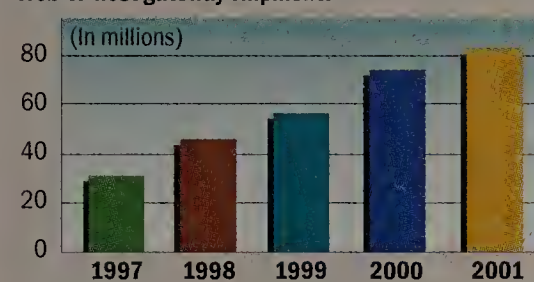
The HostView Server resides on

any Web server and downloads 3270 Java applets or ActiveX viewers to the client upon request.

changes are made. Plus the browser interface looks the same no matter which host environment the user is working in,"

LEGACY BROWSING: THE WAVE OF THE FUTURE

Web-to-host gateway shipments



SOURCE: IDC, FRAMINGHAM, MASS.

HP fills out service management plan

By Jim Duffy
Palo Alto, Calif.

Hewlett-Packard Co. last week announced two deals designed to help users track IT resource availability.

First, HP signed a letter of intent to purchase Prolin, an Amsterdam developer of help desk and other service management software.

HP also announced it will integrate its NetMetrix reporting and analysis tools with Cisco Systems, Inc. routers and switches.

The moves indicate that HP is at last serious about providing products to manage network services, such as bandwidth allocation and application availability.

After four years of alluding to it, HP formally rolled out a service management program (NW, March 31, page 8).

Under the Prolin deal, HP agreed to acquire the company and incorporate it into the OpenView network and systems management business. Financial terms of the deal were not disclosed.

Prolin's flagship Prolin IT

Service Manager consists of eight integrated software modules that help users manage their IT infrastructure.

The package also includes the services required to support business operations. The product already works with OpenView.

Prolin will retain its name and operate as a business unit in Amsterdam under the direction of Jerome Mol, Prolin's president and CEO. The acquisition is expected to be completed this spring.

In sync with Cisco

Under the Cisco deal, HP also is planning to support Cisco management information bases (MIB) in NetMetrix so network managers can discover and report on key health metrics for Cisco routers and switches.

With the enhancements, NetMetrix reporter will consolidate Cisco-based data with application, database, network and system data from other

The server then establishes a session with the SNA host and passes the data down to the client.

The company also announced Extra Objects and Extra Host Publishing System to help users and developers more easily build ActiveX and 3270 Java applications. Extra Host Publishing System, previously known as Emissary, converts 3270 data into HTML, enabling users to populate Web pages with legacy data.

Extra HostView Server will be available in May and priced starting at \$3,995. Extra Objects is available now and costs \$425; the Host Publishing System, also available now, is priced at \$25,000.

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AT YOUR SERVICE MANAGEMENT

HP's acquisition of Prolin and alliance with Cisco will enable customers to:

Run help desk and other service management programs.

Discover and report on key health metrics for Cisco routers and switches.

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Also, NetMetrix will include user-configurable report templates for Cisco networks.

Pricing for the Cisco-optimized HP NetMetrix reporter starts at \$5,995. It is expected to be available in the second half of this year.

© HP: (800) 752-0900

INTERNETWORKING MONITOR

Token ring: A market spooked

As we brace ourselves for next week's NetWorld+Interop conference in Las Vegas, there is one thing we can be sure of: There won't be any groundbreaking product announcements for token-ring customers.

In fact, from looking at the advance program guide, you wouldn't even know that token ring was an element of enterprise networks.

There is not a single conference session or tutorial that even contains "token ring" in the title. You have to scour the list of some two dozen one-day workshops before you spot token ring in the title of any Interop event. When it does appear, it shares a workshop session with frame relay access devices. Even AppleTalk gets a dedicated workshop.

What we are seeing at Interop is indicative of the treatment token-ring customers are encountering nearly industrywide. With some notable exceptions, network vendors are treating token ring as a non-issue, a latter day Arcnet that needn't be considered in product plans.

Given the rapidity with which vendors

have lost interest in token-ring technology, it is no wonder that many managers of token-ring networks are bewildered and confused.

It was little more than two and a half years ago that the Alliance for Strategic Token Ring Advancement and Leadership (ASTRAL), a multivendor, pro-token ring consortium, formed in the face of increasing pressure from Ethernet and ATM.

ASTRAL went on to publish technical papers and cost-of-ownership guides for use by token-ring network managers. Today, a visit to the ASTRAL Web site (www.astral.org) is like a visit to a ghost town. I keep waiting for the virtual tumbleweeds to roll across the screen.

I can't remember the last time I received a press release from the organization. (It issued one press release and one white paper in all of 1996). Whatever the reality, the impression is not a good one.



Kevin Tolly

Of course, the reality is that token ring has lost the fight for global domination of networking to Ethernet and its turbocharged follow-ons, Fast Ethernet and Gigabit Ethernet.

That is a fact we must face, but it does not mean token ring is no longer viable. If blame needs to be placed for token ring's second-class status, it would have to be laid at the feet of the company that invented commercially viable token ring in the first place—IBM.

Token-ring users have not seen an increase in basic transmission rates since 16M bit/sec was introduced in 1988.

IBM was expected to lead the way when it came to token ring. Unfortunately, IBM's strategic plans for the technology, never very clear, haven't led to any place in particular.

With token ring the issue is not one of technological limits but rather of lost opportunity. For reasons unknown, IBM steadfastly refused to embrace FDDI, an industry-standard 100M bit/sec LAN technology that implemented (generic) token ring.

While other token-ring vendors such

as Madge Networks, Inc. and 3Com Corp. did quite well with FDDI, IBM's reluctance caused many customers to avoid it.

A more recent 100M bit/sec option for token ring, Hewlett-Packard Co.'s 100VG AnyLan, was half-heartedly endorsed by IBM, but that technology went nowhere. IBM's only strongly supported effort was for a token-ring transition into ATM.

But, as I've noted in previous columns, ATM to the desktop — and the 25M bit/sec variety pushed by IBM specifically — have fizzled in the face of Fast Ethernet's sizzle.

Just because Gigabit token ring isn't likely to be a reality doesn't mean token ring should be dismissed as nonstrategic. It is, and will remain, a strategic part of many important networks for years to come.

Fortunately, there are vendors that realize this and still take token ring seriously.

What is needed now is a leader. In my next column, I'll address that topic.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (908) 528-3300 or via the Internet at ktolly@tolly.com.

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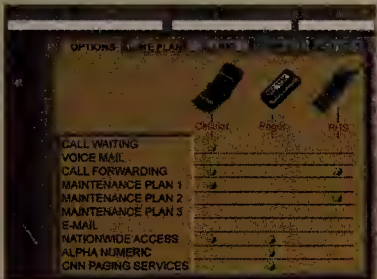
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Briefs

■ Confirming a practice it quietly started several months ago, **AT&T** announced it is now including frame relay and other data services in its **OneNet Service** contract. Originally, OneNet was designed to combine a user's Software Defined Network outbound calling and Megacom 800 inbound calls onto a single discount schedule. With last week's signing of a five-year, \$35 million contract with **Micro-Age, Inc.**, AT&T officially began adding frame relay charges to the OneNet schedule. AT&T last year began the same practice on its Tariff 12 service for very large users (NW, May 27, 1996, page 1).

■ Wireless telephone and pager users will soon be able to access their billing information via the World-Wide Web. **DMW World-wide** of Colorado Springs, announced Timarou last week, a



billing management system for wireless telecommunications service providers. Timarou will let end users access their bills and customer service agents over the Internet. Japan Communications, Inc., a Japan-based cellular reseller, is the first carrier to deploy the software.

© DMW: (719) 548-1101

■ Internet service provider **GlobalCenter, Inc.** of Sunnyvale, Calif., last week announced it will support **Rockwell International Corp.'s K56Plus**, **Lucent Technologies, Inc.'s Vflex** and **U.S. Robotics' (USR) x2 56K bit/sec modem technologies**. Once products are available from the Rockwell-Lucent team, GlobalCenter will announce its rollout schedule. The ISP will support USR's x2 technology in June.

© GlobalCenter: (800) 463-8386

Newbridge wheels out DSL gear

Customer premises equipment is based on ISDN and frame relay.

By Tim Greene
Herndon, Va.

Newbridge Networks, Inc. is slipping into the digital subscriber line (DSL) market with low-speed remote access devices designed for use with its existing central office technology.

Similar to the ISDN DSL (IDSL) offering from Ascend Communications, Inc., the Newbridge 2720 and 2721 customer premises gear is based on ISDN signaling and getting 128K bit/sec out of a standard copper phone line.

The gear represents another equipment option for carriers that offer dedicated links from remote offices to corporate networks or the Internet.

Traffic is sent via frame relay from the customer's remote office and connects at the carrier central office to a Newbridge 3600 or 36120 bandwidth manager. Traffic is diverted to the carrier's data backbone and switched to a corporate central site trunk or the Internet.

The bandwidth managers are

already installed in some U.S. carrier networks, including those of Bell Atlantic Corp., NYNEX Corp. and SBC Communications, Inc.

"It's a quick and dirty way to



Newbridge's 2720 and 2721 support digital subscriber line service at 128K bit/sec.

turn up DSL rapidly," said Kieran Taylor, a broadband analyst with TeleChoice, Inc., a consultancy in Verona, N.J.

He said service providers are looking for low-bandwidth DSL products to ease their way into the market. Carriers want to off-load lengthy, low-bandwidth data calls — such as modem and ISDN connections to the Internet and corporate networks — from voice switches to data switches. This would let them do

that, Taylor said.

The 2720 is an IP-only device that supports up to four LAN devices and is designed as an Internet access box. Users in a remote office could connect to it and share the dedicated link to an Internet service provider. The 2721 also contains a router but supports IP and IPX traffic. It has a single LAN connection and can support as many devices

as are connected to the LAN.

Both send LAN traffic as frame relay packets. At the central site, they can be forwarded over a standard time-division multiplexed link or a frame relay link to a frame relay switch.

The Newbridge gear costs more than Ascend's IDSL gear, which calls for a standard ISDN terminal adapter on the customer end. But, Taylor said, the Newbridge options include routers and packet engines.

Both are available now. The 2720 list price is \$1,395, and the 2721 costs \$2,495.

© Newbridge: (800) 343-3600

Telefonica chooses Concert for an international partner

By Denise Pappalardo

British Telecommunications plc and MCI Communications Corp. scored a major victory in the global telecom services battle earlier this month when they snatched Telefonica de Espana SA from AT&T's Unisource partnership.

The coup expands the merged BT/MCI Concert Communications' reach into Spain and Latin America and "widens Concert's lead by yet another mile over its competitors," said David Goodtree, an industry analyst at Forrester Research, Inc., a Cambridge, Mass.-based consultancy. "AT&T and its world partners were already lagging a year or two behind Concert in product, features and account team management."

Goodtree said AT&T and Sprint Corp., whose global services ventures are built on an array of partnerships with foreign carriers, are not offering their customers the same breadth of coverage as Concert.

Telefonica Panamericana-MCI, the joint venture between Concert and Telefonica, will distribute Concert services almost immediately to countries where Telefonica currently offers service, said Jerry DeMartino, MCI senior vice president of global strategies and development.

Telefonica, the largest telecommunications company serving Spanish-speaking nations, offers service in Argentina, Brazil, Chile, Peru, Puerto Rico and Spain.

The Telefonica Panamericana-MCI company also agreed to build a fiber-optic network that will span countries in North America and South America, as well as Mexico and Spain.

In addition to supporting new services, the network will link existing fiber rings, DeMartino said.



Making further inroads in the Latin American market, BT/MCI also announced recently a partnership with Portugal Telecom that will give Con-

cert an equity stake in Portugal Telecom during its next stage of privatization later this year.

An executive from BT is also expected to become part of Portugal Telecom's board of directors.

BT and MCI's new partnerships with Telefonica and Portugal Telecom will extend the reach of Concert's data, Internet and voice services worldwide, DeMartino said. Portugal Telecom will work with Telefonica in bringing Concert services to the Brazilian market, DeMartino said. ■

AT&T plans T-3 service to Asia

By Elizabeth Heichler
Boston

AT&T last week announced deals that it said make it the first company to offer high-speed, international private-line service to Hong Kong and Taiwan from the U.S.

The T-3 service is aimed at allowing multinational businesses to transmit large amounts of digital data at speeds up to 45M bit/sec.

Applications for the service include bulk transfer of data, multimedia, Internet access and LAN-to-LAN interconnection. The service will use dedicated circuits on existing undersea fiber-optic cables.

The memoranda of understanding signed with Hongkong Telecom International and

Chungwa Telecom International Business Group of Taiwan call for the development of service architectures to address maintenance, testing, provisioning and performance issues, according to AT&T. The companies also agreed to make necessary technical modifications and to share management of the international portion of their respective services.

The first customer in Taiwan, the Institute of Information Industry, will use the service to support the connection of its SEEDNet network to Internet service providers in the U.S.


For more information, contact AT&T at (908) 221-2000.

Heichler is managing editor of the IDG News Service in Boston.

A black and white photograph of a minimalist workspace. In the foreground, a simple wooden desk stands on a wooden floor. A wooden chair with a curved back is tucked under the desk. On the desk, there is a small, open book or notebook with a pen resting on it. In the background, a large window with multiple panes looks out onto a landscape with trees and a fence. The overall mood is quiet and professional.

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Eye on the carriers

You may be a user, but you're not an idiot

Suppose you're a private-line customer with legacy SNA applications. You have a limited, but competent, network administration staff and no com-

elling reason to outsource operations.

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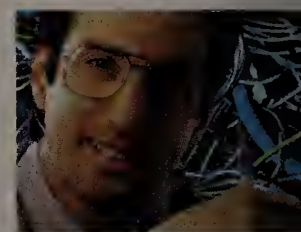


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Since your net architecture is out of date and you're a mere user, you couldn't possibly hire qualified personnel to run the new stuff — you know, the stuff we just sent our own people to training class for last week. So please sign a managed contract for several million dollars. Oh, one other thing: Could you also migrate your voice traffic to us, sign an exclusivity clause and promise not to talk to competitors until that comet comes back?

Believe it or not, there are still some situations in which it makes sense to sit tight. If you have short-range, low-speed private lines with fairly steady usage throughout the business day, and your multiplexing equipment is fully depreciated, frame relay won't necessarily save you enough money to justify the migration.

The savings in frame transport easily can be overwhelmed by the cost of letting a carrier manage your net. Those services come weighted down with substantial installation bills and extra charges for almost every feature.



David Rohde

There's a reason why carriers want your managed services business: 'Cuz they can't make much money without it. Negotiated prices for long-distance telephony have dropped through the floor on the expectation that someday the government will force local carriers to stop overcharging for access.

The pressure's on data services product managers to make some dough for their bosses. That's why frame and private-line prices are heading up and managed services are taking center stage. But only you can decide whether you have a compelling need to help out the carriers with a managed services contract.

Waiting for AT&T

Here's a fun project. Go to AT&T's Web site (www.att.com/local/). The carrier has set up a system in which you can input your state, area code and telephone exchange to see if AT&T has begun offering local exchange service in your area.

Neat, huh? Actually, it's practically useless. When you click on 42 of the states, you're stopped by a giant banner reading "NOT YET" and an explanation that AT&T is "taking the extra time necessary to make sure that our operations are up to [our] world-class standard." Choosing seven other states gets you a tantalizing "COMING SOON" banner but no option to enter your exact location.

The NOT YET and COMING SOON pages give you the option to leave your name and phone number, with the promise that AT&T will call you when local exchange service is available. I'll let you know when I get that phone call notifying me that AT&T has started competing with Bell Atlantic Corp. in Washington, D.C.

David Rohde is Network World's senior editor for Carrier Services. He can be reached at david_rohde@nw.com.

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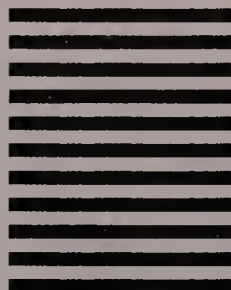


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Can Windows NT save computer-telephone integration?

By David Rohde

"Let's start at the very beginning
... a very good place to start."

— "The Sound of Music"

For mavens of computer-telephone integration (CTI), who dream of a world in which everyone makes phone calls from a PC screen by clicking on a person's name, the surging popularity of Windows NT means the dawn of a new day.

Forgotten is the time — just three years ago — when the introduction of NetWare Telephony Services by Novell, Inc. and what is now Lucent Technologies, Inc. inspired predictions that 40% of NetWare seats would be telephony-enabled by the year 2000. The reality is that if you eliminate inbound telephony call centers that percentage stands somewhere between 0% and 1%.

NT DOES MESSAGING, TOO

Specifications for AVT's new CallXpressNT messaging server:

Operating system:

Windows NT Server 4.0

Processor requirements:

200-MHz Pentium to 200-MHz Pentium Pro

Memory requirements:

64M bytes to 128M bytes RAM

Voice-port capacity:

64 initially, 256 planned

Fax-port capacity:

24

Voice-storage capacity:

1G byte to 4G bytes (100-400 hours)

SOURCE: APPLIED VOICE TECHNOLOGY, KIRKLAND, WASH.

Now zealous CTI promoters are embracing Windows NT with a line of new telephony products, slated to be delivered through this spring and summer. And instead of promoting the idea that NetWare servers should be linked to proprietary PBXs, CTI developers are promoting the idea of using Windows NT servers to displace the PBX entirely, saving users money and offering the opportunity for joint voice and data network management.

The result for network managers is likely to be a new round of CTI testing and hype, followed by a familiar struggle to find a business case to justify the

investment. A new collection of CTI products, most of them labeled "Version 1.0," is likely to emerge. The primary users of these products will be inbound call centers and small branch offices or departments responsible for heavy phone traffic.

Still, the processing power and ability to deliver new features to a PC ultimately make it a superior choice over a phone keypad for controlling voice communications, CTI promoters say.

And now those applications will be written to Windows NT — a platform many corporations are likely to settle on as their network operating system for the next five to 10 years.

"We've got customers and dealers who almost view this as a religious decision," says Joe Staples, senior vice president of worldwide marketing for Applied Voice Technology, Inc. (AVT) in Kirkland, Wash.

Avoiding the pain

It's a different story in the messaging arena where some maturing products based on PC control of voice mail features are now migrating from platforms such as OS/2 to Windows NT. That's why AVT recently migrated its CallXpress3 voice messaging system to a version labeled "CallXpressNT."

CallXpress3 enables users to listen to their voice messages, forward messages and reply to them with an E-mail-like interface. But the initial release of CallXpress3 ran on OS/2 Warp. Staples says he hopes the migration to CallXpressNT will assuage fears about installing such a foreign beast as a telephony application on a LAN.

"Dropping an OS/2 box onto a Novell network or an NT network was a pretty painful task for a dealer or a network administrator," he says.

AVT sees CallXpressNT as just the tip of the NT iceberg. Later this year, the company will migrate its Automated Agent interactive voice response server from OS/2 to NT.

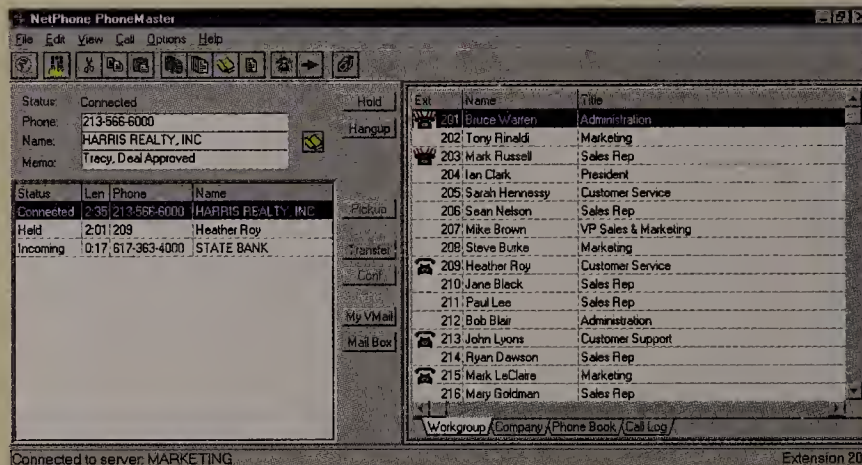
In addition, AVT has gone the acquisition route to bring other NT telephony applications in-house as fast as possible. The company already ships an

NT-based fax application called RightFax, which AVT gained in an acquisition in January 1996.

And AVT is using the PC-based automatic call distribution (ACD) functionality developed by another company it purchased this past January — Telcom Technologies, Inc. — to achieve its Holy Grail: a call center system called Agent-

"And guess what — it's an analog phone on your desk."

But now another company has come along to take a crack at the NT-based PBX. Lake Bluff, Ill.-based start-up Sphere Communications' upcoming product, Spherically 1.0, runs on Windows NT Server 4.0. Spherically uses direct socket connections to client PCs across a 25M



NetPhone's PhoneMaster desktop call control enables users to more easily control calls on hold using point-and-click commands.

XpressNT.

AgentXpressNT currently is in the circulation department of the *Denver Post*. The department comprises 40 desktops, but Information Services Director Riley Suit says he eventually hopes to use AgentXpressNT in the classified department as well, moving toward a more enterprise-wide implementation of the technology.

Who needs a PBX?

Applications such as CallXpressNT still assume the existence of a traditional PBX or ACD. But other developers figure NT is such a scalable and switching-friendly architecture that it can take the next step: to enable users to dispense with the low-end PBX entirely.

Early efforts in this direction have not resulted in much. Some vendors that have tried have enjoyed only "dismal to fair results," according to Jonathan Shapiro, president of Alliance Systems, Inc., a Dallas network integration firm that specializes in CTI.

The main problem: Between the voice boards, the server software and other components, the cost savings aren't really there, Shapiro says. "By the time you're done building a 15-line phone system, it's \$12,000," he says.

bit/sec ATM LAN, relying on ATM's quality-of-service capabilities to deliver voice traffic over the LAN.

Sphere is expected to announce general availability of Spherically 1.0 at the upcoming NetWorld+Interop 97 show in Las Vegas.

At the same time, the company is expected to announce development of an Ethernet-compatible product, although delivery is not likely soon.

But will corporate buyers rely on server software and an ATM25 workgroup switch to run the phone system? Yet another start-up is attacking that question head-on with a different twist on the NT-server-as-PBX, with a story emphasizing reliability.

NetPhone, Inc. of Marlborough, Mass., is offering a family of server-based PBX systems in which the regular phone wiring in the office is hooked up to a voice board in the server. In that fashion, the server could go down but phone calls would still go through. "As long as the board has power, you have a functioning, high-quality PBX," says John Clayton, NetPhone's founder and chief technology officer.

That doesn't mean users should be cavalier about net-

work uptime, Clayton adds. If the server is down, NetPhone's associated voice mail application will not operate and users will not be able to receive screen pops.

"That's because we use the file system capabilities of the server [for those applications]," Clayton says.

Looking for value

Besides giving users the option to junk their traditional PBXs or key systems, NetPhone hopes to sell its wares by emphasizing its associated client software, called PhoneMaster. The application enables users to dial, answer, hang up and place calls on hold using point-and-click commands (see graphic).

Users can configure PhoneMaster to query a database when an incoming call rings, automatically popping the caller's contact record onto the screen. And like AVT's CallXpressNT, PhoneMaster enables users to list, play back and forward voice mail messages from their PCs.

Go to NetPhone today and you'll still only be able to buy a system for a NetWare network. NetPhone's first product to ship, the PBX-618, runs on a single 16-bit ISA board installed on a NetWare server that supports six trunks and 18 user extensions.

The company just started working on NT, Clayton says. Along with NT support for the PBX-618, NetPhone expects to deliver by June NT- and NetWare-based versions of its PBX-T1, a PCI board attached to a T-1 access line. The PBX-T1 will support 24 trunks and 24 user extensions.

Significantly, hub giant Cabletron Systems, Inc. last year took an equity stake in NetPhone. Although NetPhone's first customers are expected to be small to midsize businesses, Clayton says he hopes the Cabletron connection will eventually give NetPhone an entry into large enterprise networks. ■

Dial up more info online:

• A guide to moving from managing LANs to overseeing CTI

• Vendor CTI white papers

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Local Networks

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Briefs

■ **Albuquerque, N.M.-based Essential Communications** last week announced a **Gigabit Ethernet** network interface card (NIC) for PCI-based



machines. The JackRabbit NIC — which contains a 32-bit Reduced Instruction Set Computing processor — supports operating systems such as Digital Unix, AIX, Solaris and Windows NT. Pricing for the adapter starts at \$1,495. The cards will ship in May.

© Essential: (800) 278-7897

■ **Superserver vendor NetFRAME Systems, Inc.** plans to take on PC server vendors by cutting the price of its NF9000 servers by about half. An NF9000 single 200-MHz processor box with 256K bytes of memory and 40G bytes of disk space will cost \$25,000; previously, the same model cost \$60,000. The company said it has been able to reduce costs by opening its NF9000 architecture to support third-party network interface cards and disk and storage subsystems.

© NetFRAME: (408) 474-1000

■ **FastLane Technologies, Inc.** of Halifax, Nova Scotia, last week released a beta version of its graphical tool for migrating **Banyan Systems, Inc. VINES** networks to Windows NT. The product, dubbed **FLyte**, provides a view of the entire VINES network and employs a drag-and-drop method for moving user accounts to new NT domains. The product has built-in error checking, which ensures that new NT user accounts are complete and do not overlap.

© FastLane: (800) 947-6752

Unisys Windows NT server hangs 10

Aquanta XR/6 model can run up to 10 200-MHz Pentium Pro processors.

By Sandra Gittlen
San Jose, Calif.

Unisys Corp. is about to raise the bar for enterprise servers.

The company, based here, next week will announce the first Windows NT-based server that can run up to 10 processors.

The symmetric multiprocessing (SMP)-based XR/6, which represents the high end of the company's Aquanta line of servers, can be configured with two to 10 200-MHz Pentium Pro processors. Until now, Pentium Pro

provide a cost-effective alternative to Reduced Instruction Set Computing-based systems for customers with transaction-heavy applications.

"Our focus is on NT," said Mary Chin, vice president of marketing operations for the Unisys Open Business Systems Group. "Even though [customers] like the features of a proprietary operating system, they are looking for a return on investment [which NT provides]," she added.

The XR/6 runs Windows NT and UnixWare. It also features up to 20M bytes of Level 3 cache, up to 8G bytes of ECC memory, as well as I/O PCI, one shared PCI/EISA and two EISA slots. Six hard drive bays offer up to 52G-bytes of internal storage capacity.

The server will be available at the end of June.

The XR/6 is joined by two rack-mounted

Aquanta servers, the HR/6 and the HS/6. These SMP machines can support up to six 200-MHz Pentium Pro processors and 340 clients.

With failover capabilities and redundant hot-pluggable components, the servers are targeted

at users that need to handle a continuous exchange of data over networks, Chin said.

With a single processor and base options, the HR/6 has a starting price of \$16,260. With a similar configuration, the HS/6 costs \$15,160. Both will be available in mid-May.

Unisys also will unveil two servers for its Aquanta Department Series: the Entry Level Server (ELS) and the General Purpose Server (GPS). The single-processor ELS and the dual-processor GPS support up to 200-MHz Pentium Pros. The ELS can handle as many as 25 clients for file, print and mail applications, while the GPS can support up to 40 clients.

The ELS is available now and is priced starting at \$2,141. GPS configurers with one processor will be available at the

end of June and cost \$2,918.

A watchful eye

In addition to announcing the new servers, Unisys will unveil Web-based software for monitoring them.

VisiNet II 3.0 will allow central system management of Aquanta servers and PCs running Windows NT or 95 in TCP/IP environments. The product can also mesh with enterprise management systems, such as Computer Associates International, Inc.'s CA Uni-

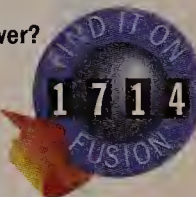
center-TNG and Hewlett-Packard Co.'s OpenView, for a view of the entire enterprise.

The software lets net administrators discover and inventory new nodes as well as monitor CPU status, memory and hard-disk capacity. VisiNet II 3.0, due to ship in May, will be bundled with Aquanta servers.

© Unisys: (888) 278-2682

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ProtoCop chases down switched network performance problems

ODS software analyzes and correlates data collected from devices across networks.

By Jodi Cohen
Richardson, Texas

Optical Data Systems, Inc. (ODS) last week unveiled management software that allows companies to better gauge network bandwidth requirements and protect their networks from invaders.

The software, called ProtoCop, runs on a central Windows NT or 95 machine and gathers data from ODS Infinite Switches and other vendors' SNMP and Remote Monitoring devices.

The configuration, performance, accounting, security and fault management data collected is dumped into a SQL database where it can be analyzed, correlated and pre-

sented to the network administrator.

Industry observers said this is an improvement over having to correlate multiple protocol analyzers, such as Network General Corp.'s Sniffer, on every switch port to get a read on a switched network's performance.

"ProtoCop acts as a surveillance camera for your network," said Joe Head, senior vice president at ODS, which plans to display the software at NetWorld+Interop

97 next month.

"We can tell you if you need a faster backbone and how many dollars you've lost due to the packets lost on that [overwhelmed] uplink," he said.

"ProtoCop acts as a surveillance camera for your network. [It] can tell you if you need a faster backbone," said Joe Head, senior vice president, Optical Data Systems.

In addition, ProtoCop can locate security breaches in and around firewalls, identify hackers, and trace Internet and foreign addresses to find possible security risks.

"The whole idea of being able to identify how much time was spent on the network and to trace where

people are coming from and going are things that traditional security products have not been able to do," said Matthew Kovar, a senior analyst at The Yankee Group in Boston.

"This allows you to prove that a person broke in and who they were so that you can assign some blame and prosecute," he said.

ODS developed ProtoCop to help customers better manage the company's family of switches. In fact, ODS added the sophisticated security features as a result of a security breach in its own network.

ProtoCop costs \$15,000 and will ship in May.

© ODS: (214) 234-6400



The latest Word on security

We all worry about network security and erect seemingly insurmountable obstacles to keep away hackers and intruders. With all of the safeguards you've put in place, you can sit back and chuckle when the latest Windows NT

security bug is discovered. After all, if hackers can't reach your NT server, there's not much they can do to exploit the security hole.

But then again, you've probably also heard the biggest security breach source is inside your company. It's not teenage hackers but disgruntled or curious employees who are your biggest security risk.

While it's true that many of your security measures will thwart these employees, they may have an unknowing accomplice easing the way for them. It could be your CEO, chief technology officer or chief financial officer (CFO), or any of their assistants who have legitimate access to sensitive information and who use Microsoft Word.

To see what I mean, try this simple test. Open Word, write a few paragraphs, and then save and close the document. Now open it again, change some things, add a few lines, and save and close the file again. Open the document once more and embed a small picture in it. Print the document, save it and exit Word.

Now open your Notepad text editor, load the Word document and compare it to the printed document.

Do you see lots of extraneous information in Notepad, such as words and maybe even blocks of text that aren't in the printed document?

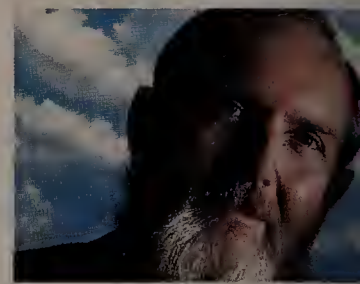
The problem is Word stores lots of extraneous information with your document, such as deleted text, other programs that you have open or possibly even directory listings. Any of this information could wind up in the text editor edition of your document. You will be amazed.

Is there anything you can **Dave Kearns** do? I'm sure you

don't have the time or inclination to load every document circulating on your network into a text editor to check for sensitive information. And there isn't any filtering software sophisticated enough to weed out possible compromising documents among the many created or modified every day by your company's employees. You could recommend that any document intended for circulation be saved as "text only," but the CFO likes to dress up the financial news with different fonts and pictures, doesn't he?

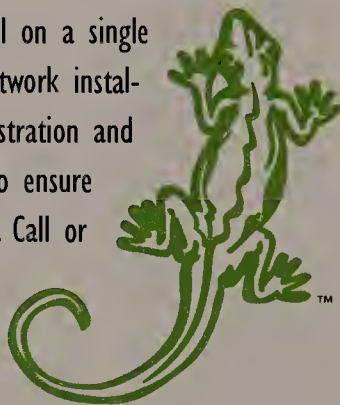
I'm afraid that the only real tool you have is education. Make end users at your company aware of the possible problems. Show them how to examine possibly sensitive documents with a text editor.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at dkearns@msn.com.



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Tip of the week

Raptor Systems, Inc. has released The Wall for Windows NT, a firewall for small networks that can be upgraded to Raptor's full-blown Eagle product for larger networks. The Wall for Windows NT is priced starting at approximately \$1,000 for 25 end users. For more information, visit www.thewall.com.

Software offers Unix, NT ties

By Christine Burns
San Francisco

Softway Systems, Inc. this week will roll out a new version of its Unix and Windows NT integration product that allows users to run Unix applications unchanged on NT servers and workstations.

OpenNT is a Unix subsystem that sits on top of the NT kernel and ties into NT's security model, file system and domain architecture. OpenNT 1.1, released last year, lets users run native, character-based Unix applications alongside graphical 16- and 32-bit Windows applications.

The new version of OpenNT enables NT workstations and servers to run client/server and Web-based Unix applications via new support for Unix Sockets and TCP/IP. OpenNT 2.0 also allows NT users to run graphical X Windows programs on the NT machines by simply clicking on a Windows icon. The version provides a Unix-style multiuser capability that lets several users simultaneously tap into a Unix application running on an NT Server.

OpenNT is a means for permanent Unix and NT coexistence and a migration utility that can make it easier to bring NT

into the enterprise, said Softway's CEO Doug Miller.

"We basically bring NT up to the level of a full-purpose Unix OS," Miller said. However, OpenNT does not afford any additional scalability "because it runs on NT and is, therefore, bound by its limitations," he said.

Beta testers have found OpenNT 2.0 useful in managing distributed Unix and NT resources.

"It's a bridge between Unix and NT administration," said Eric Bradac, a systems administrator at Western Sugar Co. in Denver. "It runs the shell scripts we've got to handle the Unix boxes and the utilities on the NT side from a central place."

While conceding that OpenNT is a useful tool for NT and Unix coexistence, analysts questioned its viability for running enterprise applications.

"You won't use this for running big database or order-entry applications. If you want those on NT, you'll port them there," said Peter ffoulkes, principal analyst at Dataquest, Inc. in San Francisco.

OpenNT 2.0 ranges in price from \$229 for a workstation license to \$979 for a server package. ■

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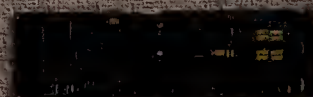


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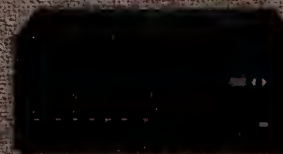


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


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Financials

Sybase results spur talk of comeback

Database vendor counts on the 'Net and components to fuel growth.

By John Cox
Emeryville, Calif.

Although Sybase, Inc.'s financial results slipped a bit during the first quarter, Wall Street analysts said the company appears to be recovering from the troubles it has experienced over the past two years.

Sybase lost millions of dollars last year as a result of myriad

company's annual customer conference, at which Sybase unveiled a product architecture aimed at exploiting the latest application development and Internet technologies. The products fleshing out the architecture are intended to let customers create applications from ready-to-use software modules, called components, and run the

special data types such as images and text. New development tools from Sybase's Powersoft subsidiary, especially the PowerJ product for Java applications, should give programmers a solid tool chest. New middleware, such as the Jaguar Component Transaction Server, will let companies create transaction-oriented middle-tier application servers for scalable business applications.

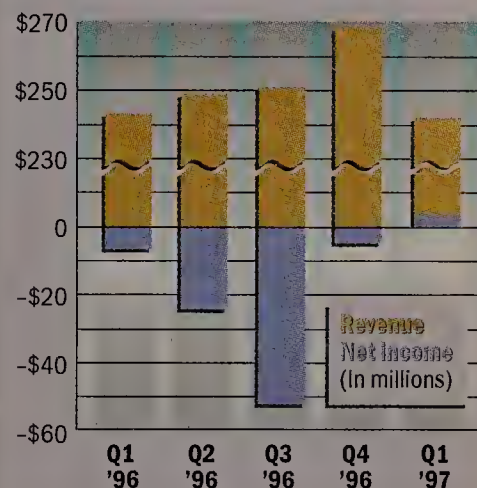
Customers have welcomed the product direction. "It looks like they're catching up [with the competition]," said James Richardson, systems engineer with Thomson Financial Services, Inc., a Boston-based company that markets a financial software application that uses a Sybase database.

"If [Sybase's] approach works, we will be able to create

business objects, such as a purchase order in Java, and then place them where we want," said Stephan Schamback, president and CEO of Intershop Communications, Inc., a Burlingame, Calif., developer of shopping software for the Internet.

MONEY MATTERS

While Sybase is back in the black, revenue has started to slide.



That kind of customer enthusiasm is important, analysts said, because it will fuel demand for the new generation of development tools and middleware that is part of the Sybase plan. ■

problems, including product delays and defects, loss of focus and tougher competition. While the company's profit for the first quarter was smaller than that earned during the fourth quarter of 1996, analysts were encouraged by the second consecutive profitable quarter.

"We'd been looking for a slight level of profitability — about 1 cent per share — and they came in at 5 cents per share," said James Pickerel, senior analyst at Hambrecht & Quist LLC, a brokerage firm. "Nearly all of their upside was driven by cost savings [not increased sales]."

"The first quarter is seasonally a weak one because so much [corporate] IS spending falls later in the year," said Neil Herman, a research analyst with Solomon Brothers, Inc. in New York. "So in its toughest quarter, it was nice to see Sybase make some money."

Still, Solomon maintains a "hold" recommendation on Sybase stock. "They're not finished yet with the turnaround," Herman said. "We want to see recovery in their application development tools and connectivity software businesses."

The favorable earnings report came on the heels of the

"This is the beginning of the rebirth of Sybase."

Sybase CEO Mitchell Kertzman told customers earlier this month that the company's financial health is improving and new products will position customers to make better use of the Internet.

application logic as needed on client computers, middle-tier application servers or back-end Sybase databases.

The SQL Server database is now called Adaptive Server and is being modified to work with

Start-up's pitch: The Envelope, please

By Paul McNamara
Cupertino, Calif.

If a California start-up delivers on the promise of its first product, E-mail recipients may no longer need Carnac the Magnificent to decipher multimedia messages and attachments.

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PostX Corp. is rolling out PostX Envelope, a Java-based E-mail add-on the company claims will allow users to send text, doc-

uments, video and audio in a customizable package that will stay intact and be easy to open. The software, which features a security option based on calling ahead to the recipient with a password, will be demonstrated this week at Internet Showcase '97 in San Diego.

While the client-only software will not be for sale until September, analysts and test customers were quick to give PostX Envelope an initial stamp of approval. Plans for future Java-based enhancements, coupled with a widely predicted mushrooming of Java Virtual Machines (JVM) on corporate desktops, could make PostX Envelope a hit, they said.

According to PostX CEO R.C. Venkatraman, image-conscious corporations and direct marketers will be attracted to Envelope's ability to fashion a

graphical E-mail wrapper that will provide notification to the sender after a message has been received and opened. A Java-based Active View feature will allow senders to include a series of executables that, in effect, guide a recipient through a pre-designed reading experience.

Envelope runs on Windows 95 and is fully integrated with Microsoft Corp.'s Outlook, Netscape Communications Corp.'s Mail 3.0 and Communicator, and Version 3.0 of America Online, Inc.'s E-mail program.

Envelope is impressive, said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass. However, he questioned how quickly mainstream business PC users will get JVMs on their desktops so those who send and receive messages through Envelope will be able to use the product to its fullest.

PostX Envelope will cost between \$30 and \$50 per user.

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Sorting out messaging security

"There ain't no way in hell our company is going to use 40-bit encryption," said one user from a large company. And so the debate raged at the recent IETF

Secure MIME (S/MIME) meeting in Memphis, Tenn.

The issue was whether S/MIME, a vendor-driven specification for encrypted or

digitally signed Internet mail content, should become an Internet standard.

A number of issues were raised about what some call S/MIME's "dirty little secrets." Prominent among these are the specification's mandate for RSA Data Security, Inc.'s proprietary 40-bit RC2 algorithm for bulk data encryption. The IETF is reluctant to use proprietary

or licensed technologies.

Of even more concern is that S/MIME implementations must be able to send and receive encrypted information at levels that conform to U.S. export policies, using 40-bit RC2 and 512-bit RSA algorithms.

Supercomputers can crack 40-bit RC2 encrypted information in seconds, while the more limited equipment hackers or corporate competitors possess might do it in hours. With some S/MIME-compliant implementations, the naive user could buy a product capable of 128-bit encryption but actually send sensitive data unknowingly at the crackable 40-bit level.

S/MIME vendors developed the 40-bit profile with the best intentions, namely to ensure interoperability between strong crypto and export-level crypto products. The initial results have been impressive: six compliant implementations already have been tested. And heavyweights such as Lotus Development Corp., Microsoft Corp. and Netscape Communications Corp. have all committed to support the standard. However, what was **Daniel Blum** good for inter-
operability has now become a hurdle to international IETF acceptance.

Users should consider S/MIME for their messaging architecture, but should inquire carefully before purchasing products. One offering that does the job right is WorldTalk Corp.'s WorldSecure S/MIME client. The client software always defaults to 128-bit operation. The user must consciously select a "low-grade" or "export-grade" encryption button to get anything less.

Users should also consider Pretty Good Privacy technology such as PGP, Inc.'s client software. William Crowell, National Security Administration deputy director, once said it produces 128-bit encryption that would take "12 million times the age of the universe to crack." Like WorldTalk, PGP is developing secure plug-ins to work with popular clients such as cc:Mail, Eudora and Exchange.

Unfortunately, PGP and S/MIME represent two mutually exclusive security data formats and trust models.

RSA and S/MIME vendors should open up the specification to nonproprietary algorithms and take whatever measures are necessary to ensure that users don't inadvertently lose their corporate jewels. Given these concessions, PGP might join the S/MIME team, bringing its substantial installed base onboard a single, secure Internet mail standard.

Learn more about secure messaging at Blum's Next-Generation Messaging seminar sponsored by Network World and Rapport Communication. Call (800) 643-4668 for details. Blum is a principal at Rapport Communication and can be reached at dblum@mindspring.com or www.rapport.com.

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IP_{v6} THE NEXT GENERATION FOR TCP/IP INTERNETWORKS

The next generation of Internet Protocol — IPv6 — will significantly impact your TCP/IP network. The Internet explosion now requires new functions that go beyond the capabilities of the current Internet Protocol, or IP. These include enhanced security, support for real time traffic flows and expanded addressing capabilities. The addressing issue has been one of the most significant concerns as it was predicted that the Internet community would run out of available addresses, thus limiting the growth of this critical communication resource.

In late 1990, the Internet Engineering Task Force (IETF) initiated efforts to select a successor to the IP. In late 1993, the IETF formed the Internet Protocol — Next Generation (IPng) working group, which was chartered with investigating the various proposals, and recommending a course of action. The outcome of those efforts produced what is now known as IP version 6 (IPv6), which is currently being implemented by many vendors.

Perhaps more importantly, IP is the foundation of the TCP/IP protocol suite. Therefore if IP is revised, other protocols must be changed as well. The significance of this protocol revision extends to LANs, MAN and WAN transmission systems, as well as the upper layer protocols and application programming interfaces.

Whether you are a network manager, designer or software developer, this seminar, taught by internetworking expert Mark Miller, will provide you with information on the widespread ramifications of this new protocol. You will learn how to effectively plan and implement a successful, orderly transition.

Enterprise Network Management Understanding SNMP, SNMPv2 and RMON

With the explosive growth of enterprise internetworks, the need for integrated network management systems to help simplify management operations has never been greater. Today's enterprise network management systems need to manage thousands of elements — from the hardware devices all the way to the applications and processes running on these networks.

SNMP (Simple Network Management Protocol) has become the de facto standard for end-to-end enterprise network management. Recent enhancements to the SNMP-based technology, including SNMPv2, RMON2 and Web-based management tools, improve this popular system. With those enhancements, however, come additional challenges for the network manager.

This one-day, information-packed seminar, taught by internetworking expert Mark Miller, will help you understand the elements of an SNMP-based network management system, how to implement SNMP with your internetwork, plus the various enhancements such as the new message formats and improved error codes provided with SNMP version 2. You will learn about recent enhancements to the Remote Monitoring (RMON) network management architecture, known as RMON2, and the advantages of implementing RMON throughout your internetwork. In addition, you will see how SNMP is being used to manage broadband networks, including frame relay, SMDS and ATM.

You will also be introduced to the next generation of network management: Web-based tools that integrate SNMP and browser technology. This new technology consists of three components: network management software which runs on a Web server, proxy agents which operate on the managed devices, providing updates to the Web server, and a browser-equipped workstation that can access those management details from any location within the enterprise.

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7. Analyze the formats of the IPv6 packet header, Extension headers, ICMPv6 messages and Neighbor Discover messages, and others.
8. Gain detailed insights into how the IPv6 transition will affect other protocols, such as Ethernet, token ring, RIP and OSPF
9. Learn how to strategically plan your transition from IPv4 to IPv6
10. Learn how leading vendors such as Bay Networks, Cisco Systems, Digital, FTP Software, Sun and others are implementing IPv6
11. Learn about the 6Bone — a worldwide IPv6 network
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5. Learn the details of the key elements of the Internet Network Management framework: the SMI, the MIB and the SNMP
6. Discover how existing Web-based enterprise managers and existing SNMP-based devices can be integrated into a cohesive system
7. Understand the enhancements found in SNMPv2, plus the proposed security enhancements: SNMPv2u and SNMPv2*
8. Survey the key elements of Abstract Syntax Notation One (ASN.1), the language used to define SNMP message formats
9. Understand the key differences between the RMON and RMON2 standards for remote management of the enterprise
10. Consider strategies for the coexistence of SNMP version 2 with existing SNMP version 1 systems

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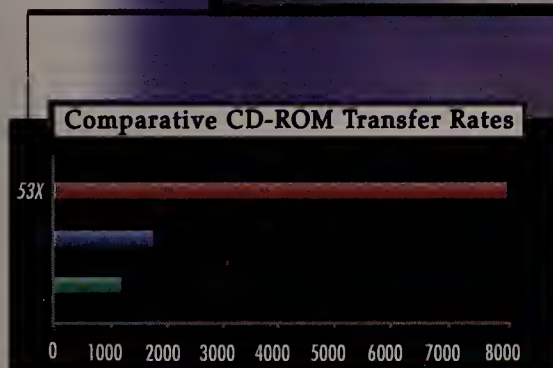
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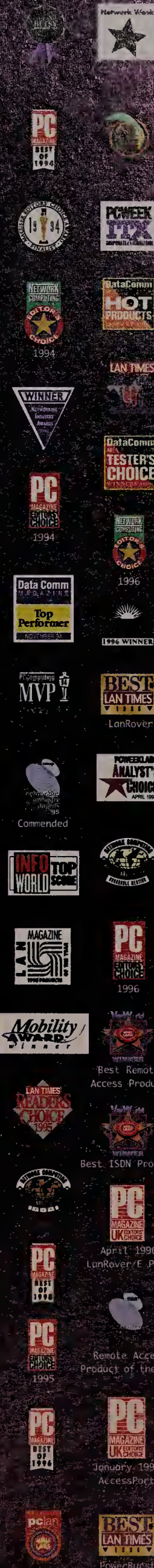
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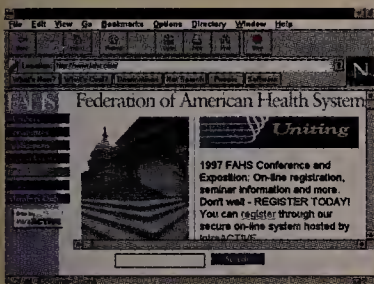
COMPUWARE

Intranets & the 'Net

Covering: Internet Technologies and Services
for Collaboration and Electronic Commerce

Briefs

■ **The Federation of American Health Systems**, a Washington, D.C.-based trade group representing 1,700 hospitals, has made available to its members a password-based Web site that uses **IntraActive, Inc.'s InTandem groupware**. The health care Web site will let members hold discussions, get news about regulation and share files with the trade association's executives.



■ **RSA Data Security, Inc.** this week will announce **JSAFE**, a tool kit that lets Java application developers use RSA's core **encryption technology** for DES, DES-X, RC2, RC4 and RC5, MD-5 and SHA-1. The tool kit is expected to be available in the second quarter.

© RSA: (415) 595-8782

■ **Rainbow Technologies, Inc.'s** Internet Securities group next week will start shipping the **CryptoSwift PCI** card. It installs into a server bus to provide encryption using **Secure Sockets Layer**, **Personal Communications Technology** and other public-key encryption protocols.

© Rainbow: (714) 450-7450

■ **Campbell, Calif.-based Ukiah Software, Inc.** today will announce that its **NetRoad FireWall** now runs on **Windows NT** in addition to **NetWare 4.X**. Ukiah's firewalls are priced starting at \$995 for 10 users.

© Ukiah: (408) 369-2890

■ **V-ONE Corp.,** based in Rockville, Md., has received approval from the Commerce Department to export its **SmartGate** encryption product with no limitation on the encryption key size.

© V-ONE: (301) 838-8900

JavaSoft's president looks ahead

Alan Baratz says the focus will be on Java-based server programs.

QA Sun Microsystems, Inc.'s JavaSoft division is smack in the middle of the Java scene. It leads the charge in updating the Java Development Kit (JDK) specification used by programmers worldwide. It also has created a handful of Java-based applications, such as the HotJava browser and HotJava Views for managing desktop applications. JavaSoft President Alan Baratz spoke with *Network World* Senior Editor Ellen Messmer at the recent JavaOne conference in San Francisco about what's on tap for Java.

What are your goals for JavaSoft this year?

There are three or four things that we need to get into the JDK quickly. They are the Java Foundation Classes and 2-D technology, which includes the rendering engine and fonts. There's enhanced security that preserves the sandbox safety model. Then we want to get the Enterprise JavaBeans libraries delivered to simplify application development on the server side. And we

want to launch Personal Embedded [Java code that runs on smart cards].



Read the full transcript of our interview with JavaSoft's Alan Baratz.

www.nwfusion.com

Why the server focus?

We have gained momentum with respect to application delivery and use within the enterprise, but a lot of that has been focused on front ends to existing back-end systems.

Some of the first customers to build those front ends are now starting to do back-end, server-side Java work.

So the push for the coming year is on the server side, for JavaSoft to get IS organizations the added functionality they need to simplify server-side Java development.

What would that entail?

That's what we call a Java platform for the enterprise or Enterprise Java. It's a collection of new APIs for Java: transaction services, naming and directory services, management APIs, database connectivity and messaging services. The idea for all of these is that an application developer can write to Java APIs for invoking transactions, getting relational database information or doing messaging. The libraries associated with these APIs bridge to whatever legacy transaction processing monitors, database engines or messaging systems you have.

Like CICS, for example?

Exactly.

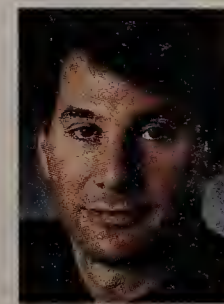
So you're building bridges?

Right. That's the first step. The second thing we're doing is making it easy to build those server-side applications, such as JavaBeans, as opposed to monolithic blocks of code. For exam-

ple, you could build a JavaBean that manages updating employee salary information. You could build another JavaBean that deals with updating benefits information.

The interesting thing is that when you change an employee's salary, there may be several things that need to get done, such as actually changing the salary in the database, but also updating the benefits associated with the salary change.

So if you've got a few different Beans and now you issue a transaction, those Beans need to work together to get everything done. But they need to do this with transaction integrity.



JavaSoft's Baratz

Right now, JavaSoft has about 400 employees. What's your growth projection?

We'll be at 600 employees by the end of the fiscal year.

Will they be mostly engineers?

Most of the mix has been engineers. Going forward, we'll grow engineering, but we're going to invest more heavily in marketing and sales to strengthen the developer programs in particular. ■

Harbinger ships tool for conducting EDI over VANs or the 'Net

By Ellen Messmer
Atlanta

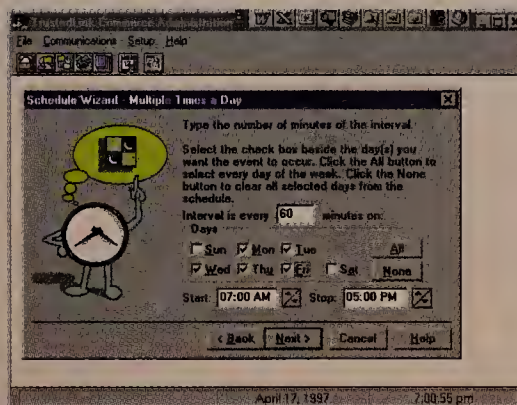
Harbinger Corp. today will release an electronic data interchange software suite that lets Windows users send and receive EDI data over the Internet and integrate that data into business applications.

The TrustedLink Commerce for Windows 2.2 suite can run on a Windows 95 or 3.1 client, or Windows NT server.

The new product lets users choose whether to send EDI information, such as invoices or purchase orders, over a value-added network (VAN) or the Internet.

Users needing Internet connectivity must purchase a separate pack, TrustLink Commerce Internet Software. Another component of the suite includes a desktop EDI translator — called

TrustedLink Commerce Integrator — and a mapping tool for moving EDI data to and from the user's business applications.



Harbinger's TrustedLink software lets users integrate EDI and general business applications.

TrustedLink Commerce for Windows is designed for smaller companies that are typically pushed by their larger trading partners into conducting busi-

ness via EDI.

But EDI, which started in the mainframe environment and has become increasingly popular on Unix servers, has been expensive and technically difficult for many smaller companies to implement.

The appeal of Harbinger's EDI software is that users can run it on any Windows platform. It also has a comparably low price tag of about \$5,000.

Eric Nilsson, senior product manager at Harbinger, said companies that send only a few hundred EDI documents per day will likely use the Windows 95 or 3.1 desktop version of TrustedLink Commerce. If the EDI volume is 1,000 or 2,000 documents per day, they will probably

want to go with the Windows NT server version of the product, he said.

Miller Brewing Co., in fact, is asking its distributors to use Harbinger's new software, letting them choose whether to send EDI data over the Internet or a traditional VAN.

"Over the next several years, Miller Brewing expects to roll out copies of TrustedLink Commerce Integrator to our network of distributors," said Skip Schattschneider, Miller's manager of distribution automation services.

TrustedLink Commerce for Windows 2.2 costs \$2,050; TrustedLink Commerce Internet is \$2,350; and TrustedLink Commerce Integrator, which includes the mapping tool, is \$5,250.

© Harbinger: (404) 467-3000

NET INSIDER

How important is fast?

The Next-Generation Internet (NGI) initiative announced by President Clinton during the election campaign last fall is turning out to be

something quite real. A draft action plan is now available for public comment (www.hpcc.gov/ngi-concept-08Apr97/), and those comments are due by May 15.

This is an ambitious plan supported by \$100 million or so in federal funding. It has three main goals: high-performance connectivity, advanced network service technologies and the demonstration of revolutionary new applications.

The plan's high-performance connectivity goal has two subgoals: First, connect 100 or more sites through a network with

interconnect speeds of 100M bit/sec or more; and second, connect a smaller number of sites at rates greater than 1G bit/sec. The former will be accomplished by strengthening the National Science Foundation's existing very high-speed backbone network service along with the NSF's high-performance connections program, and perhaps by working with the higher education-driven Internet II project. The latter will involve building a new, very high-speed network among a few research sites.

Under advanced network service technologies, the goal is to develop and demonstrate network service technologies that will be required in future data networks to support next-generation applications. Areas to be explored include quality of service (QoS), security, robustness, network management, routing protocols, computer operating systems and distributed applications environments.

Finally, under the banner of demonstrating revolutionary new applications, the program will explore a few targeted next-generation applications and demonstrate the sort of network-hungry ones that will be made possible using the high-performance connectivity and advanced network service technologies.

With its ambitious goals, **Scott Bradner** this initiative has the potential to develop technology that will be critical to the continued growth in scale and uses of the Internet.

But I do admit to a nagging worry. It does not seem to me that enough emphasis is being put on goal No. 2 — developing new network service technologies to provide a more useful Internet. Clearly, research in ultra high-speed networks is quite important, but it is not just pure network speed we need to support. A very real need is to develop the ability for the network to handle variations in demand and to scale up and down in speed.

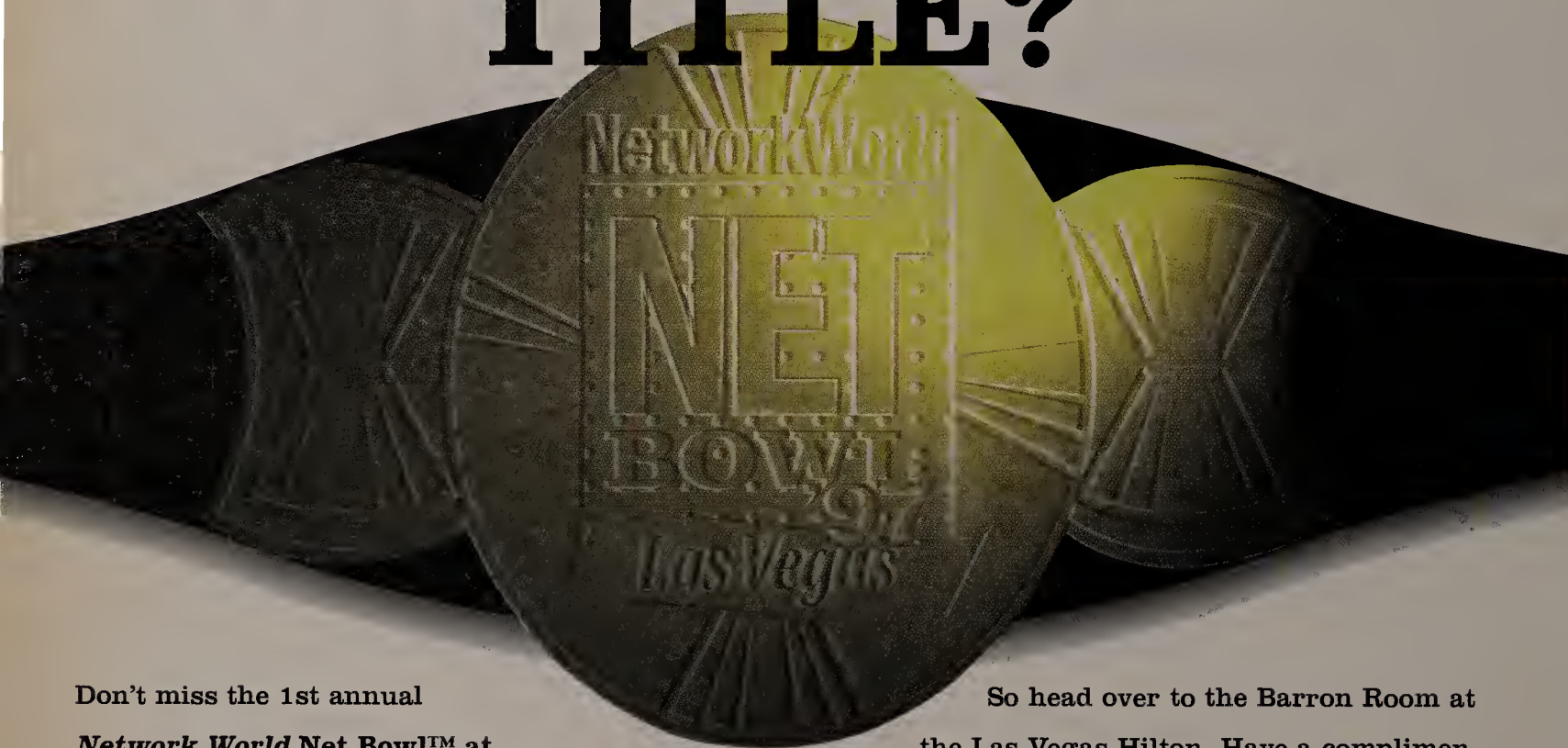
This leads me to wonder how much better the current Internet would now be if more research money had been spent on IP in the past few years.

It is not clear yet what the balance of funding will be for each of the NGI goals, but it is clear that building a new network to provide gigabit and higher data rates is a very expensive proposition. It would be a shame if we were to dedicate a disproportionate share of the NGI funding to this effort at the expense of working on the network service technology badly needed for networks of all types and speeds.

Disclaimer: Of course, Harvard has great QoS and has demonstrated significant robustness, so the above worry must be my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached via the Internet at sob@harvard.edu.

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Proceeds from the **Network World Net Bowl** will benefit **NetDay 2000**, an organization that helps reduce the economic and technological barriers that have previously prevented underprivileged schools the benefits of Internet and communications technologies.

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I am running NetWare 3.12 on a server that occasionally gets this message: "Primary interrupt controller detected a lost hardware interrupt." What does this mean, and how do I find this "lost" interrupt?

In addition, I want to add the system's latest patches and upgrades. Any words of advice or warning?

Via the Internet

The NetWare operating system is trying to tell you that a potential hardware problem exists. The message indicates that a hardware device in the server generated an interrupt service request (ISR).

The ISR trips a flag inside the CPU indicating that a piece of hardware has a job requiring the CPU's attention. When the CPU got around to processing the job, it could not identify which device generated the ISR.

Look at the configuration of the server hardware, and list all the interrupts used by the motherboard and the cards plugged into the motherboard. If you have any device using Interrupt 15, relocate it to a different interrupt. According to some Novell engineers, NetWare 3.12 uses this interrupt internally for a garbage collection process to free memory for use elsewhere in the server.

As for updating NetWare 3.12, consult the `patlst.txt` file at <http://support.novell.com>.

But before applying any of the patches, identify what devices in the server are not supported by NetWare out of the box, and check with the vendors to see if new drivers are available. Sometimes patches or updates cause problems when third-party modules are loading.

You also should copy the files that will be replaced into a backup directory in case something goes wrong during the upgrade. Using the Novell-supplied `conlog.nlm` to log messages displayed on the file server console screen also can prove a valuable debugging tool in case a problem arises after the module has been updated.

Building mission-critical applications in Java

Java stored procedures are an important piece of an overall architecture for building a network computing environment.

By Steve Levine

Today, Java is used mainly on clients, but the desktop doesn't have to be the only place the programming language comes into play in a network computing environment.

Developers would like to use Java for programming applications in a middle tier, such as a Web application or database server. Java's features also can benefit developers building the server side of mission-critical applications.

However, additional capabilities are required for enabling the use of Java beyond the desktop.

First is the ability to write Java code that easily accesses relational databases. This gives the developer a link to information stored in corporate databases.

Second is the ability to run Java code in the database server, not just at the desktop. This lets the developer write applications that run close to where the data is stored, eliminating the need to move data to the client for processing and reducing network traffic.

Java stored procedures combine these capabilities and provide a powerful platform for delivering applications.

Java and relational databases

Java handles information differently than relational databases, which store data in tables made up of rows and columns. The information is accessed from the database through SQL.

On the other hand, Java stores information in objects — hierarchical data structures that map to business or real-world entities.

Java objects may be much more complex than a standard relational table or a combination of multiple tables.

The differences between Java and SQL need to be managed when accessing relational data from Java.

There are two complementary means through which Java programmers can access relational data. They are Java Data-

base Connectivity (JDBC) and J/SQL.

JDBC, specified by Sun Microsystems, Inc.'s JavaSoft unit, is a standard set of Java classes that provide vendor-independent access to relational data. Modeled after Microsoft Corp.'s Open Database Connectivity standard, the JDBC classes provide features such as simultaneous connections to several databases, transaction management, simple queries and calls to stored procedures.

partners to promote J/SQL as an open standard and to provide a free reference implementation model on the Web. The reference implementation of J/SQL requires JDBC, but other implementations may not.

Java stored procedures

Java stored procedures require implementing a Java Virtual Machine (JVM) in the database. The JVM is a piece of software currently implemented with the Java Development Kit or

based on tightly integrating JDBC or J/SQL with a JVM running in the database.

Oracle, for instance, is developing Java stored procedures that will provide a development platform for building network-based enterprise applications that combine the expressive power of the Java language with the reliable and scalable capabilities and performance of the Oracle7 database server.

Java stored procedures allow developers to use Java for a new set of applications. For example, without Java stored procedures, Java could not be used in an application in which the Java code would access a large number of records.

The application would perform poorly because of the overhead of moving large amounts of data over the network. The solution is to use Java stored procedures.

Stored procedures languages, such as Oracle's PL/SQL, are an accepted way of providing programming capabilities within the database.

Java stored procedures are one piece of an overall architecture for building network computing applications.

With Java running in the client, application tier and database server, developers have a platform for building applications that take full advantage of a network computing environment.

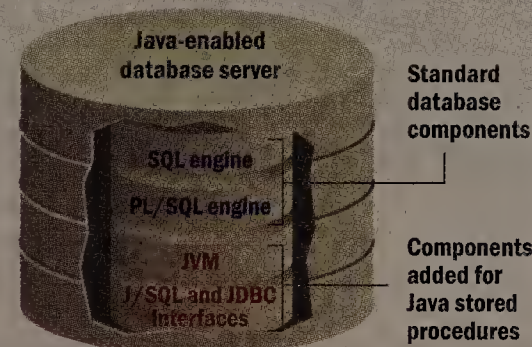
Levine is director of Internet marketing and server technologies at Oracle. He can be reached by phone at (415) 506-3880 or via the Internet at sdlevine@us.oracle.com.

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Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Beth Schultz by phone at (773) 283-0213 or via the Internet at beth_schultz@nww.com.

UP CLOSE Java and databases

Java stored procedures provide a development platform for building network-based enterprise applications that combine the power of the Java language with the reliability, scalability and performance of database servers.



JAVA STORED PROCEDURES:

- Combine the ability to write Java code that easily accesses relational databases and the ability to run Java code in the database server.
- Require implementation of a Java Virtual Machine (JVM), J/SQL or Java Database Connectivity (JDBC) interfaces in the database server and tight integration between the two.
- Are not vendor proprietary.
- Allow Java to be used for new sets of applications, such as those requiring the Java code to access large numbers of records.

JDBC is a call-level interface that provides dynamic access from Java to SQL. A number of database vendors and third parties, including Intersolv, Inc. and WebLogic, Inc., offer JDBC drivers.

J/SQL is embedded SQL for Java. It provides an easy-to-use, high-level interface to relational data. J/SQL promotes safety — so your database doesn't crash — through compile-time type checking.

J/SQL is currently implemented as a precompiler. This means J/SQL code is translated into pure Java code that can be used to access any database with JDBC support.

Oracle Corp. is working with

embedded in desktop browsers.

Specific features, such as support for many users running Java simultaneously, are required when putting Java on a database server instead of on a desktop PC. The Java database implementation also has to be scalable to large numbers of users and, therefore, requires extremely efficient memory usage.

The JVM will have to efficiently compile Java code to provide performance close to that of C code.

In general, the JVM would have to meet the same expected standards for reliability, availability and scalability as the database server.

Java stored procedures are



The end of the open Web

Sorry if that headline sounds apocalyptic. But I don't think anyone's paying enough attention to a problem that will complicate our lives in the very near future.

The problem is the balkanization of the Web — the growing battle over proprietary features among vendors marketing what were once standard Web technologies. Because companies like Microsoft and Netscape are trying to differentiate themselves, the Web's most valuable feature — its openness — is quickly being compromised. Our intranets and electronic commerce efforts will suffer. Our development costs will also increase.

We raised this issue last summer ("The Whole Web in its Hands," July 22 and 29, 1996, page 1) in a two-part series examining the World Wide Web Consortium (W3C) — the key standards group for Web technologies. We questioned whether the W3C could keep pace with hyperaggressive vendors fighting for market and mind share.

Our concern over the openness of the Web grows. For example, Microsoft and Netscape are now sparring over the push technologies that will be employed in their products to broadcast Web pages. Push is a critical area for content providers who are worried about having to tailor content for users of Microsoft and Netscape products — not to mention the many other forms of push being pushed today.

Get used to it.

Microsoft and Netscape are also sparring over the direction of dynamic HTML and Java class libraries, and Microsoft is squaring off against practically the entire industry over the direction of Java itself. There will be more battles to come.

The beauty of the Web is that it enables us to rise above the multi-vendor limitations of our networks. The Web unites Macs, Unix machines and Windows. But if this current trend continues, we'll find ourselves in the client/server mess again, supporting different clients and servers and developing applications that serve narrow groups.

I'd love to tell you I have a solution, but I don't. The market forces behind the problem are so powerful, it's unlikely the situation can be changed. It would be nice to think that customers could complain and vendors would listen. But I suspect that would be futile. As the Internet market grows, vendors have to differentiate to survive. They have to build installed bases today to be successful tomorrow. That's the nature of competition, and the standards makers will find it harder and harder to bridge the different approaches.

Is this inevitable? Must we acknowledge that the open Web may simply have been a brief, shining moment in the history of networking? Or, is there something customers can do now to prevent the Web from unraveling? Let me know what you think we should do.

John Gallant, editor in chief

jgallant@nww.com

Totally Unplugged • Ira Brodsky

Casey and me, or why bigger doesn't mean better

When U.S. Robotics, Inc. (USR) announced plans to merge with 3Com Corp. last month, each company justified the move by saying it needed to be bigger to continue thriving. Having known USR's Chairman and CEO Casey Cowell for 18 years — and having worked for him twice — I found it all rather ironic.

My first stint with USR was in 1979. Nestled in a run-down building just west of Chicago's downtown loop, USR was the classic shoestring operation. Lured by the prospect of working with automatons, I answered a small ad in the *Chicago Tribune*. I had to elude a gauntlet of panhandlers to keep my appointment with Casey.

"Where are the robots?" I asked.

"We don't make robots," Casey explained. He told me USR's main objective was to turn TV sets into computer terminals, but as this was beyond their present means, they had settled on producing modems — 300 bit/sec acoustic couplers, to be exact. (Later, Casey dashed my hopes by admitting the company had established an unwritten rule: We shall make no product with moving parts.)

Counting the three founders, I was the sixth employee and first full-time marketing person. My job was to find customers. Casey handed me the Yellow Pages. Drawing inspiration from Dale Carnegie's *How to Win Friends and Influence People* and several cups of coffee, I began dialing for dollars. Although most cold calls end in rejection, it is exhilarating when you uncover a potential customer. I learned an important lesson: Start-up firms can't afford to let their egos get in the way of success.

Every phone call at USR was an adventure. One of Chicago's "L" trains literally ran past our windows. When a train came roaring by, you had to put the party on hold. But there were two conversations I will never forget.

One was with a guy who told me USR was wasting its time — it could never compete against leading modem makers such as Racal-Vadic and Penril. Just for kicks, we decided to give it a whirl anyway.

The other was with a veteran telecom professional. He decided to take me under his wing for 15 minutes. "Son," he said. "You got into the right industry, but at the wrong end. Modems aren't going to be around much longer." Just think, some people have been waiting for ISDN since the 1970s.

Another memory of early USR was how the three founders would confer by locking themselves in Casey's office for hours on end. At the time, I thought they were just college kids playing "big corporation." After all, Casey tallied five modem sales by drawing four vertical lines plus a crosshatch. (Some months, he barely made it past the first crosshatch.) In retrospect, the meetings I presumed a waste of time must have helped the founders sharpen their business skills.

I left USR within a year to explore the world of data communications. Casey rehired me as director of product marketing in 1986, when the company started to take off. One thing he did that drove me crazy was jump from one "urgent project" to another. I longed for closure. But as I have learned in my own business, it makes no sense to finish something just because you started it. Entrepreneurs succeed by sifting through hundreds of ideas, abandoning the good for the better.

Too bad manufacturers can't grow their businesses by remaining small. There are many things not to like about big companies. One is they create their own myths — like the idea their customers love them so much they want to buy everything from them.

So when USR and 3Com say they need to combine forces to prosper, I can't help but remember the guy on the phone who assured me that little USR didn't have a chance. And when two giants talk about becoming a "one-stop shop," I can't help but think such arrogance creates the opportunity for the next USR to make that rags-to-riches climb.

Brodsky is president of Datacomm Research Co., a Wilmette, Ill., consulting firm. He can be reached via the Internet at ibrodsky@ix.netcom.com.



Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

Access is ample

Your article "Westinghouse offers voice over ATM without the headaches" (March 17, page 19) gave a thorough account of the capabilities of Westinghouse Communications' Cell Transfer Mode (CTM) service. However, we'd like to clarify an important point.

At the conclusion of the article, a consultant, Tom Jenkins, stated that Westinghouse will "oversell this network two, three, four, five, maybe even 10 times." On the contrary, Westinghouse is committed to providing a high-level, quality engineered product to our customers, and maintaining network capacity to support all voice and data services we market.

Users are the center of Novell's new world



Last summer, when other analysts were sounding the death knell for Novell, Inc., my prediction for a rebound seemed to fly in the face of reason. Now that Novell has a new CEO at the helm — and more importantly, a focus — my prediction doesn't seem so wacky after all.

I'll go on record proclaiming Novell back on track as a leading networking company. And, if you listen to the company's executives, Novell will soon make a name for itself in the Internet/intranet business. That's easy enough to believe, now that Internet visionary Eric Schmidt is in charge (NW, March 24, page 1).

But Novell isn't looking to lead only in the Internet arena as we know it today. According to Chief Scientist Drew Major, Novell has its sights on the next big wave in networking, which the company has dubbed "user/network computing." Beyond client/server computing, beyond Internet/intranet computing, Novell sees a user-centric world of rich content, services, resources and applications. Major outlined the company's plans for user/network computing at Compaq Computer Corp.'s recent Innovate Forum 97 conference.

In this next era of computing, the user is the center of the universe, not the workstation, the server or even the TCP address. Wherever the user is — at the office, at home, in a hotel room or at a service kiosk in a store — the network recognizes the person's individual identity and provides the applications and computing environment specific to the user. According to Major, the attributes of user/network computing include: a global identity, secure communication, extreme mobility, transparent disconnectability, managed access and universal connectivity.

Needless to say, the infrastructure we have in place for our networks today won't fully support this new environment. Major believes we'll need a powerful infrastructure connecting clients and servers to provide capabilities and solutions to Internet problems that cannot easily be implemented at the client or server end points. Of course, Novell is setting itself up to provide many of these new infrastructure services, known in the Novell lexicon as the Network Services Fabric.

Components of the fabric include directory services (Novell's current strong suit), security and access control, communications filtering and caching, and object-level communication.

In addition, the new infrastructure will need a universal execution environment, which is shaping up to be Java, as well as support for diverse platforms such as network computers, handheld devices and even WebTV.

For some time now, Novell has been quietly positioning itself to enable user/net-

work computing by providing a standards-based and platform-independent fabric.

Over the past year or two, the company shed its noncore businesses and refocused on resource sharing, collaborative applications, border services and management tools. Novell is also gearing up to provide specialized network services and become the ultimate Java server platform.

Later this summer, the company is expected to ship the Novell Border Services Suite — tools that bridge the space between corporate intranets and the Internet. Among the various capabilities of the Border Services Suite, Novell claims it will boost the performance of networks to deliver Internet-based content at LAN speeds.

Other features focus on management technologies to control the potential chaos of the Internet, enhanced security and fully encrypted private network connections using low-cost public links.

But Novell's rosy outlook doesn't stop there. Last month, Novell and Netscape Communications Corp. announced they are teaming up to form a new, jointly owned company, Novonyx, Inc. The company is chartered with the task of adapting Netscape's user-friendly Web server software to run on servers running Novell's NetWare or Intra-NetWare.

The resulting software should provide stiff competition to Microsoft Corp.'s Web server offerings, which have gained market share by virtue of their price — practically free. (For more information on Novonyx, check out www.novonyx.com.)

Ironically, participation in Novonyx puts Novell in partnership with one of its Web competitors. Novell and Netscape directly compete in the areas of electronic mail and collaborative software (groupware). However, both companies believe the benefits of partnership are greater than the conflicts caused by competition. Indeed, Novell should end up with a very compelling intranet solution that will appeal to its installed base of 60 million users worldwide.

For those of you who thought Novell missed the opportunities and vast market potential for products and services to exploit the Internet and homegrown intranets, think again. Novell may have been slow to react to the Internet boom, but it certainly has jumped into the fray with gusto. As Major repeatedly says, "We're so excited." And they should be at Novell.

Musthaler is vice president of research at Currid & Co., a Houston-based technology assessment firm. She can be reached at (713) 789-5995 or via the Internet at linda@currid.com.



When Westinghouse designs and engineers a user's CTM network, we recommend an access pipe that will allow them to reach our network and provide the level of service users require. Access to the Westinghouse network is provided by one or more lines that can support voice, data and video applications. Efficient usage of access lines, coupled with the ability to share ports, provides a lower cost solution to customers without compromising quality.

*Thomas Shimko
Vice president of marketing
Westinghouse Communications
Pittsburgh*

However, the article implies that TTY-Watcher is some sort of invincible hacker tool. This is simply not true.

Please set the reader's mind at ease. First of all, any company that allows wide-open telnet access to internal servers is asking for trouble. Second, any system with an easy-to-guess root password is asking for more trouble. Finally, any self-respecting firewall, coupled with Unix TCP wrappers, can provide ample protection against TTY-Watcher and the other programs of its ilk.

*Jon Gardner
Network administrator
City of Bryan, Texas*

The author responds: Some security analysts believe the various authentication methods cannot detect or prevent the attack known as "IP splicing" because the attacker hijacks the session after the authentication has occurred. If an application could require continuous authentication, IP splicing would not be undetectable.

Your readers should know that there are, in fact, defenses against a TTY-Watcher attack.

TTY-Watcher appears to be a serious threat in cases where the security mechanism relied upon is a fixed or time-variant password provided by a password-generator token such as SecurID. The problem with this approach is that an access control decision is based on an authentication check that occurs only at the beginning of the session.

There are several ways to prevent this type of attack, aside from encryption of the session

data, as mentioned in your article. Two techniques are message authentication codes, which provide data integrity and allow verification of the data source, and digital signatures, which provide similar guarantees.

These techniques preclude a hijacker from taking over a previously authenticated connection.

*Paul Van Oorschot
Chief security architect
Entrust Technologies, Inc.
Napacan, Ontario*

Teletoons



Phil Frank and Joe Troise baba@sfgate.com

Skip the sensationalism

Ellen Messmer's article "No defense against latest hacker tool?" (March 24, page 1) smacks of sensationalism. In the world of the Internet, nothing is completely secure, and internal breaches are all too common.

Go online to read more letters to the editor.



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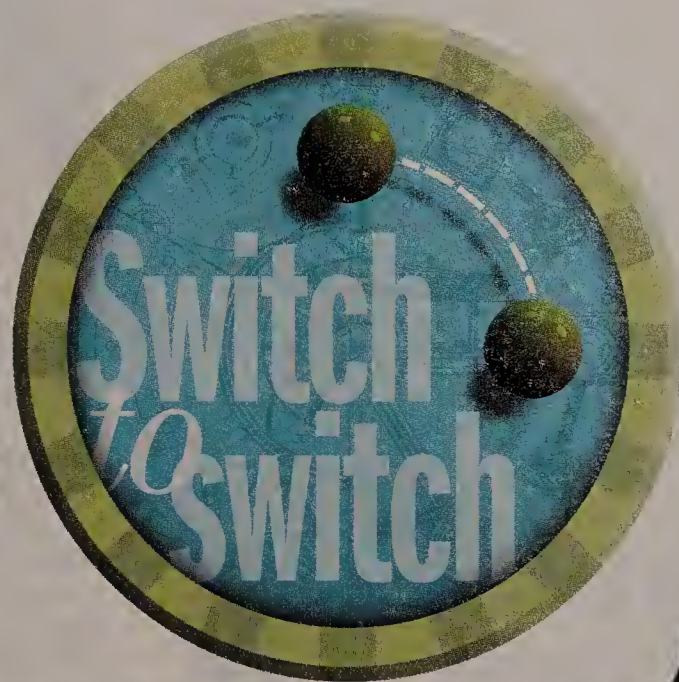
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Planning for Gigabit Ethernet



*A look at three
implementation strategies
shows why only two of
them make sense.*

By Kevin Tolly

Given the near-incessant airplay Gigabit Ethernet is receiving, it's only a matter of time before management asks you to outline your implementation plans for the technology.

Superficially, this is an easy task. After all, vendors tell us, Gigabit Ethernet's most attractive feature is that it's "just very fast Ethernet." It is not, we are told, complicated like ATM LAN Emulation. But when one considers the miniscule amount of product available for prototyping and the myriad approaches being proffered by vendors, it becomes apparent that devising a strategy is no simple task.

To jump-start your efforts, *Network World* commissioned The Tolly Group to take the Gigabit Ethernet plunge. We did this by inviting several dozen Gigabit Ethernet vendors to send literature and, if possible, product. We made it clear we were open to any product implementing any

form of Gigabit Ethernet technology. Furthermore, we explained we were not looking to do a head-to-head lab test. Our intent simply was to get a feel for the technology and how best to implement it.

While most vendors sent only press kits stuffed with spec sheets and white papers, we did receive and successfully test Gigabit Ethernet gear from, in order of arrival, Cabletron Systems, Inc., NBase Communications, Inc. and GigaLabs, Inc. All sent switches with Gigabit Ethernet ports. GigaLabs also provided a Gigabit Ethernet network interface card (NIC) to run in a Windows NT server.

To date, discussions of Gigabit Ethernet have typically focused on esoteric and exotic aspects of the technology — such as "carrier extension" or "interrupt coalescence" (don't ask) — while

failing to address higher level issues. This is a mistake. The technology is for naught if an implementation strategy is flawed or, worse, non-existent.

The intent here is to jettison technical jargon and concentrate on building a rationale for enterprise deployment of Gigabit Ethernet. First, it's clear the technology can be used in three ways: for switch-to-switch connections, server-to-switch connections and endstation-to-concentrator connections.

The connection types are listed in the order we expect network managers will choose to implement Gigabit Ethernet. It's interesting that the order is the opposite of that found in the deployment of traditional Ethernet.

While our research led to this implementation order independent of any product testing, the products available for our hands-on evaluation offered a measure of support for the theory. Three vendors offered switch-to-switch products, and one offered a server-to-switch implementation. From endstation-to-concentrator vendors,

we saw nothing.

For a variety of reasons, explained in detail below, the level of acceptance for the three connection types will differ dramatically. Switch-to-switch, already available, is a sure winner. Virtually every network manager will require wider pipes between switches.

Server-to-switch will be applicable in certain high-end server environments but will be overkill in most situations.

Endstation-to-concentrator, which amounts to shared Gigabit Ethernet, may die on the vine. Given the technical difficulties of creating shared LANs running at 1 billion bit/sec and the general reluctance of network managers to return to any shared environment after experiencing dedicated LANs, shared Gigabit Ethernet may be difficult to sell. (At this point, I'm sure the shared Gigabit vendors will start writing their letters to the editor.)

Let's take a look at each connection type.

Switch to switch

- Pros**
- ▲ Removes 100M bit/sec switch-to-switch ceiling
 - ▲ Easy to implement
 - ▲ Several products available in Q1 '97

- Cons**
- ▼ Currently nonstandard
 - ▼ Top performance levels unproven
 - ▼ Stability unproven

Examples: Cabletron's Gigabit Ethernet SmartSwitch Module

Module: NBase's MegaSwitch II
GigaLabs' GigaStar 3000

Outlook: Likely to be implemented first given the need for backbone bandwidth, product availability and ease of implementation.

The popularity and low prices of 10M bit/sec and Fast Ethernet switch ports led to their rapid adoption. That, in turn, has made astute network managers concerned about potential interswitch problems. After all, even without contending with Fast Ethernet stations, having dozens of switched 10M bit/sec links funneling into a switch outfitted with only a single Fast Ethernet uplink can easily result in congestion. Add Fast Ethernet server connections to the mix and congestion is almost a given.

It is as an aggregation link between switches, then, that Gigabit Ethernet finds itself most in demand. At a certain point, Gigabit Ethernet (or OC-12 ATM) is required to support a switched

Ethernet and Fast Ethernet deployment strategy.

You can think of Gigabit Ethernet as a way to create an extended, high-speed backplane between existing 10/100 switches. In fact, at least one vendor plans an implementation of Gigabit Ethernet to serve as a connecting mechanism between modules in its stackable switches.

Technically, there are a couple of reasons why switch-to-switch connectivity is the easiest to implement. First, all communication is between like devices — switches. Thus, all hardware and software development automatically applies to both ends of the connection. This is not the case for the other connection types.

Next, the fact that a dedicated connection is used simplifies things dramatically. It eliminates the possibility of collisions and allows vendors to ignore arcane issues, such as carrier extension and packet buffering, that are impeding vendors of shared Gigabit Ethernet technology.

Lab notes

For the "proving ground" aspect of our study, we turned to pairs of switches from Cabletron, NBase and GigaLabs. Setting up our first switch-to-switch Gigabit Ethernet connections was almost anticlimactic. Since "exterior" 10/100 ports are unaffected, not a single change was needed for any of the clients or test tools we used to generate traffic. In all cases, we simply hooked up the 10/100 stations to the switches, connected switch-to-switch Gigabit Ethernet ports, performed little or no configuration and had a connection.

In each test case, we loaded up traffic sources until we had several hundred megabits per second flowing into ports, across switches and back out again, proving that the Gigabit Ethernet link was operational. We were not concerned with attempting to max out the connection.

The only real issues are interoperability and cabling. Given that we remain months away from a ratified standard, these products are, by definition, nonstandard. (Vendors prefer the euphemism "prestandard," since they intend to comply with the standard when final. The fact remains that such products are still "nonstandard.")

However, because most network managers choose to build their campus network backbones around a single vendor's technology, the use of nonstandard gear is not likely to be a significant issue. Nonstandard switch-to-switch connections are in the interior of the network and invisible to traffic flowing in and out. All switches offer stan-

dard, interoperable 10/100 interfaces to the outside world. Though our tests were not exhaustive, we did not encounter a single glitch that could be laid at the feet of Gigabit Ethernet.

With the standard still a work in progress, the physical layer (cabling) also falls into the non-standard category. Cabletron and NBase shipped us Gigabit Ethernet modules equipped with proprietary multimode fiber connections. This is what we expected.

While it worked just as well, GigaLabs chose a pair of heavy-duty copper connections, outfitted with large SCSI-style connectors, for each of its Gigabit Ethernet connections. Apart from the fact that they are more unwieldy than the fiber connectors, they worked fine. The only possible downside is the additional faceplate real estate the GigaLabs connectors require.

Given the relative deluge of switch-to-switch products we received for this evaluation and the stellar operation of the devices, expect the number of vendors shipping this category of Gigabit Ethernet products to rise dramatically in the near future. Furthermore, it appears that even in its nonstandard state, the technology is ready to roll into enterprise backbone networks.

As for pricing, it looks like you can expect to pay approximately \$3,500 per Gigabit Ethernet port — NBase and GigaLabs modules come in at that price. The Cabletron Gigabit Ethernet module, however, lists at \$24,995 for two ports. But you get a high-function blade that includes Virtual Routing, Remote Monitoring and Cabletron's SecureFast Virtual Networking. Given that you might need only a few connections to get started, Gigabit Ethernet is likely to be something that all but the leanest budgets can handle.

Server to switch

- Pros**
- ▲ Removes 100M bit/sec ceiling, allowing a greater potential workload into and out of the server
- Cons**
- ▼ Currently nonstandard
 - ▼ May consume excessive server CPU
 - ▼ Effective throughput levels remain unproven

Examples: GigaLabs' GigaBit Ethernet NIC
Alteon's AceNIC PCI-NT

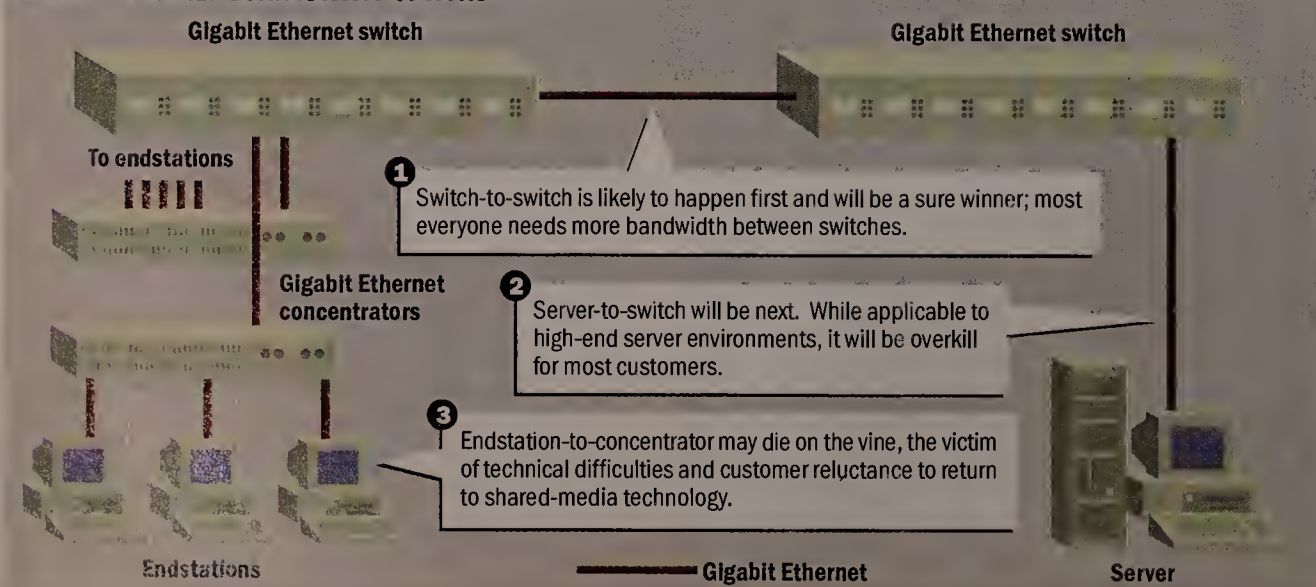
Outlook: Likely option for very high-end servers with identified network bottlenecks. Overkill for most servers.

When it comes to congestion hot spots, next in line is the server. It's not uncommon for enterprise servers to cost upwards of \$50,000 when outfitted with multiple processors, and RAID disk and other fault-tolerance options. Such super-servers may need to service hundreds of users simultaneously, so you certainly want to avoid having data trickle in and out because of network bottlenecks.

Gigabit Ethernet server links appear to be a natural evolution of the "dedicated server bandwidth" strategy. When Ethernet switches were introduced, a key implementation objective was to provide direct connections for servers. Throughput improved immediately by eliminating the possibility of collisions.

Full-duplex, "20M bit/sec" (10M bit/sec inbound plus 10M bit/sec outbound) Ethernet followed shortly thereafter. Allowing traffic to travel to and from the server simultaneously eliminated the potential bottleneck presented by Ethernet's traditional half-duplex, flip-flop transmission protocol.

GIGABIT ETHERNET CONNECTIVITY OPTIONS



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While this strategy was effective when traditional 10M bit/sec Ethernet ports were involved, the move to Fast Ethernet, and ultimately Gigabit Ethernet, is complicated by other factors.

Servers, and even client stations, can easily generate traffic sufficient to fill a 10M bit/sec Ethernet. But that isn't the case with 100M bit/sec or faster links. At higher speeds, the network often is not the bottleneck. In fact, you can expect throughput levels of well under 100M bit/sec from most Pentium-class servers. Trying to drive a 155M bit/sec ATM-connected server at or near line rate requires Pentium Pro hardware.

Protocol stack inefficiencies, use of small frame sizes and application latency can all contribute to this lackluster network throughput. For all we know, it simply may not be possible at this time to find any realistic application that can sustain a transfer rate of 1G bit/sec.

When the stack isn't the problem, it's usually the CPU. Again, with Fast Ethernet, we've observed situations in which sustaining data rates near the 100M bit/sec level consumed nearly all of the server's CPU.

Here, achieving near wire speed is a Pyrrhic victory because the loss in available CPU is typically staggering. With network transfer operations consuming so much of the CPU, few, if any, CPU cycles are left to do productive work. This being the case with Fast Ethernet, one can imagine the implications for Gigabit Ethernet.

Fortunately, Gigabit Ethernet NIC vendors are aware of at least some of these issues. While there is nothing they can do to enhance sluggish applications, they can attempt to deal with the CPU problem. For instance, Alteon Networks, Inc. appears to be building its entire strategy around Gigabit Ethernet server switching.

The Alteon Gigabit Ethernet NIC, which was not in production in time to be included in our hands-on evaluation, will attempt to reduce host CPU consumption by off-loading certain functions and optimizing the use of others.

TCP/IP checksum calculation, for example, will take place onboard the adapter rather than in the server. Internal buffer and interrupt management is designed to further lighten the load on the processor. And relatively large, 9K-byte "jumbo" frames can be used to move data from the server to the Gigabit Ethernet switch, further optimizing the data flow and reducing the load on the CPU.

Lab perspective

For the proving ground, we looked at the Gigabit Ethernet NIC from GigaLabs, which has its own view on how to eliminate the inefficiencies related to standard NICs: get rid of the NIC. GigaLabs already offers I/O switching, wherein the NIC is removed and replaced by a card that, in essence, extends the PC's PCI bus out of the PC and directly into the GigaLabs switch. No NIC, no NIC bottleneck (NW, Feb. 3, page 37).

Unfortunately, the gear arrived after our deadline, so testing was limited. But we set up and configured a GigaLabs PCI NIC in an NT server and connected it to clients attached to 10/100 ports of a GigaLabs GigaStar switch. After a quick driver upgrade, we brought the Gigabit Ethernet NT server online. As expected, the Windows 95 client had no problem communicating with it.

But you should have a few concerns about the approaches of vendors promoting these and other server-to-switch products. First, the pre-standard implementations of Gigabit Ethernet and the proprietary approach taken by GigaLabs

require you to use a single source for equipment. Most of you are accustomed to being able to mix and match NICs and switches. Even with Fast Ethernet and ATM, mix and match is standard.

Second, even after the standard is ratified, it is likely that innovations like Alteon's jumbo frames will remain proprietary. So even if different vendors' gear can be mixed, there is a loss of functionality.

Finally, we don't know that any of this will work as advertised. Will this sophisticated technology give us painless, very high-speed networking? And do we really need it?

Despite our best efforts, these questions have yet to be answered: Alteon was not able to provide any gear, and GigaLabs' gear came in so late that we were only able to prove it worked at a most basic level.

With the practical needs of network managers somewhere above 10M and below 100M bit/sec, what will be the attraction of Gigabit Ethernet for servers?

Think of it another way: You'd be happy to turn in your golf cart that had a maximum speed of, say, 10 mph, for a real car with a top speed of 100 mph. How anxious would you be to trade that one in for a vehicle that tops out at 1,000 mph? Unless you happen to live on the salt flats in the Southwest — and have deep pockets — you probably couldn't find any justification for it.

But you'll have to decide for yourself, so here's a sampling of early pricing. The GigaLabs NICs start at \$2,495, while the Alteon AceNIC PCI with NT drivers, which should be available by press time, has a price tag of \$1,495.



Station to concentrator

- | | |
|-------------|--|
| Pros | ▲ Shared gigabit ports are less expensive than dedicated ports |
| Cons | ▼ Implements modified CSMA/CD standard |
| | ▼ Reduced network diameter |
| | ▼ More significant interoperability issues than other configurations |

Examples: Packet Engines' Gigabit Ethernet Full Duplex Repeater

Outlook: Limited acceptance is a strong possibility. Many Gigabit Ethernet vendors will not offer shared-media products.

The final connection type recreates a traditional 10M bit/sec shared LAN — with the speed multiplied by 100. Taking Ethernet's carrier-sense multiple access with collision detection (CSMA/CD) approach and ratcheting it up to 1G bit/sec isn't just a major challenge, it's virtually impossible. At the very least, it is highly impractical.

In shared Ethernet's collision detection architecture, the diameter of the network — or the total length of the cable run — is a critical element. If the network is too "wide," a station transmitting Ethernet's smallest legal frame size, 64 bytes, will not be able to detect a collision and the protocol simply won't work.

As the transmission medium becomes faster, the maximum network diameter narrows. For Gigabit Ethernet, the shared network would have a diameter of less than 20 meters (NW, Feb. 10, page 31).

To make shared Gigabit Ethernet viable, vendors have had no choice but to make significant

enhancements to the protocol. That is, it really isn't 802.3 CSMA/CD anymore.

In order to support a reasonable network diameter of 100 to 200 meters, Gigabit Ethernet architects are recommending that 512 bytes become the shortest legal frame size.

For data frames smaller than 512 bytes, a carrier extension would be added to pad them out to 512.

Exotic packet-bursting schemes that combine small packets into a single larger packet are also being proposed to try to make up for the wasted space of a required 512-byte frame.

And there's more. The transmit or receive, half-duplex, flip-flop protocol required in shared Ethernet (and shared token ring) would cause a performance hit as stations queue up for access to the medium.

So some vendors have proposed the standardization of intelligent, buffering concentrators that would allow full-duplex communication between the station and the concentrator.

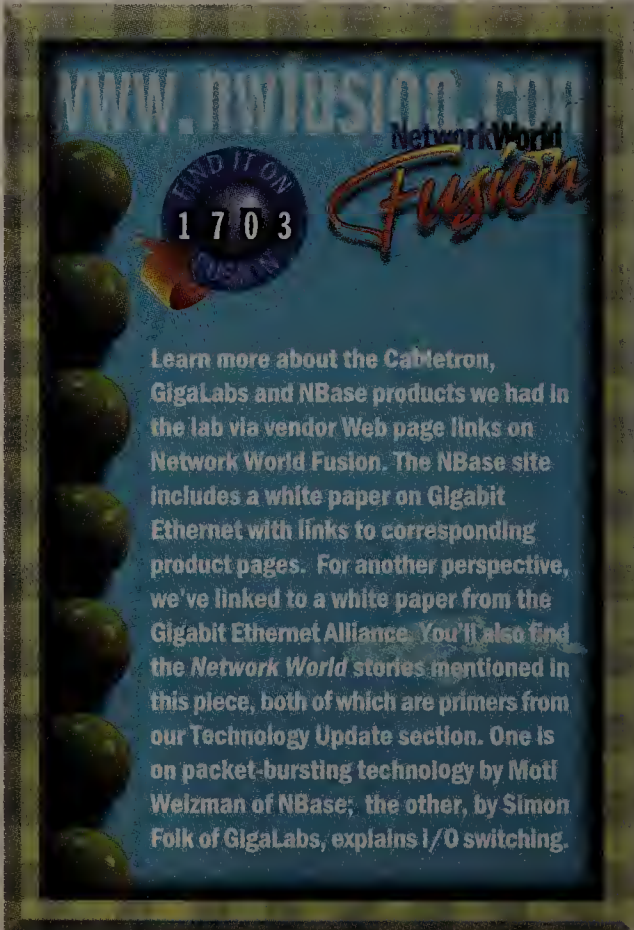
With no products offered up for our proving ground, we don't have the benefit of first-hand experience and may be missing something. (Letter writers, here is your chance to set us straight.)

But the added complexity of revamping the basic Ethernet protocol and the absolute requirement for multivendor interoperability in a shared environment might delay the availability of functioning, interoperable shared Gigabit Ethernet products.

In fact, many vendors of switched Gigabit Ethernet products have absolutely no intention of offering shared Gigabit Ethernet products.

While there is still much to be done by the vendors, at least it's clear that there's more here than vapor. Expect to see quite a few managers installing some billion-bit bottleneck-breakers before the year is out.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (908) 528-3300 or via the Internet at ktolly@tolly.com.



Learn more about the CabMetron, GigaLabs and NBase products we had in the lab via vendor Web page links on Network World Fusion. The NBase site includes a white paper on Gigabit Ethernet with links to corresponding product pages. For another perspective, we've linked to a white paper from the Gigabit Ethernet Alliance. You'll also find the Network World stories mentioned in this piece, both of which are primers from our Technology Update section. One is on packet-bursting technology by Moti Weizman of NBase; the other, by Simon Folk of GigaLabs, explains I/O switching.





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NetworkWorld **PC WORLD** SERVER TEST SERIES

A monthly feature in which we evaluate file and application servers based on tests conducted in a lab owned jointly with our sister publication, PC World.

Old friends meet some newcomers

By William Rinko-Gay

Call it old home month. In this installment, we're checking in again with some vendors that have previously passed through our labs.

In the case of Hewlett-Packard Co.'s NetServer LH Pro 6/200, it's a second go-round for the same server, but this time we're testing it with a RAID adapter under a revised benchmark that includes Web server testing. Under the new criteria, the LH Pro performed acceptably (although it looks like the competition is catching up), but it's manageability and reliability still make it shine.

Micron Electronics, Inc. sent us an updated version of the VETIX EL 1000 we reviewed in January (NW, Jan. 13, page 34). The new VETIX LXI is a higher end model with better performance and more integrated features, albeit at a higher price.

The HP NetServer E40 6/200 and the Digital Equipment Corp. Prioris MX 6200SMP are new servers that represent new markets for their respective vendors. The NetServer E40 is an excellent low-cost, low-maintenance machine, but it lags in performance. The Prioris MX sets a new standard for affordability in Digital's line-up with interesting reliability features and excellent application performance.

ing files. Quick Launch had trouble finding the right directory for our NetWare source files, but we expect that's because the product was designed for NetWare, not IntranetWare. We began the installation of IntranetWare normally, and it found the files Quick Launch had copied, so the ease-of-use features still worked. The other ServerWORKS products worked equally well for managing our Prioris Server, creating driver diskettes and providing online documentation.

In terms of maintenance, it's easy to get to the inside of the Prioris. The front bezel is held on by a keyed lock. Once that's removed, two captured thumbscrews release the side panel, which has a reference label for easy configuration. This large tower has more than enough room to maneuver inside. The processors and memory are easily accessible without removing the card on which they are mounted. Should you need to remove the card, you can do so without tools.

This machine is roomy in part because there are no slots in use. All the necessary adapters are integrated into the system. Even cables are kept well out of the way.

Digital has corrected the one problem we had with the Prioris server line by providing a plastic tool for removing the hot-swappable drive carriers, which are difficult to remove by hand.

Digital is well-known for good service, support and solid engineering. The MX is no exception. The MX line also supports Intelligent Server Management for hardware support of management tasks and Digital Clusters for Windows NT. Digital promises it will support Microsoft's Wolfpack, as well.

Indeed, Digital has broken the price barrier to owning a Prioris server with the MX 6200SMP, which has an estimated street price of \$5,800. This machine has the standard Prioris features, including hot-swappable drives, Prioris ServerWORKS management software and ease of maintenance that's second to none.

The Prioris MX is a good overall performer. It took top honors in the NetWare database and NT Notes tests while scoring second as a NetWare file server, behind the speedy Compaq ProLiant 800. The Prioris' other scores were in the middle of the pack.

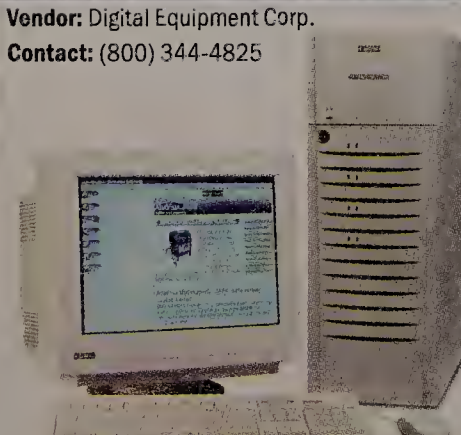
Prioris ServerWORKS Quick Launch enables you to set up Windows NT and NetWare with little fuss. With IntranetWare 4.11, for example, Quick Launch asked us a few questions regarding our server installation and then started copy-

Digital Equipment Corp.
Prioris MX 6200SMP

OVERALL SCORE	8
Performance (40%)	8
Features and flexibility (40%)	8
Management apps/features (10%)	8
Serviceability (10%)	8

Scores are based on a scale of 1-10. Percentages are the weight given to each category in determining the overall score.

Prioris MX 6200SMP
Vendor: Digital Equipment Corp.
Contact: (800) 344-4825



Price
\$30K
\$20K
\$10K
0
\$5,800

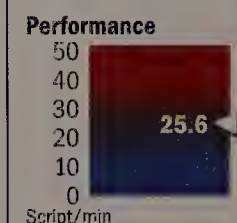
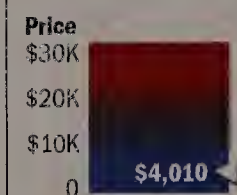
Performance
50
40
30
20
10
0
30.7
Script/min

Performance ratings are based on the results of file server, database and Web server tests at the 16-client level. For these workgroup servers, results are weighted according to the following percentages for each kind of test:
File server 35%
Web server 35%
Database 30%

NetServer E40 6/200

Vendor: Hewlett-Packard Co.

Contact: (800) 752-0900



Performance ratings are based on the results of file server, database and Web server tests at the 16-client level. For these workgroup servers, results are weighted according to the following percentages for each kind of test:

File server 35%
Web server 35%
Database 30%

The NetServer E40 6/200 is the second generation of the E series server from HP. Geared to small businesses or branch offices with no IT staff, NetServer E40 features simplicity of operation and design, along with remote management capabilities. You might call this a "Server for Dummies."

To start, the E40 supports Windows NT Advanced Server 4.0 and comes with the option of Novell IntranetWare for Small Business. Both are easy to set up for intranet capability.

The chassis of the E40 is small and has only one switch and one LED on the front, so even a novice can turn it on and check power/drive status.

Slide the cover off and you'll find configuration stickers that provide all the information you need to configure the system. The inside is free of clutter, but we found it a bit difficult to remove the drives from the rear of the system. We found a diagnostics diskette in a pouch inside the computer that had the instructions to

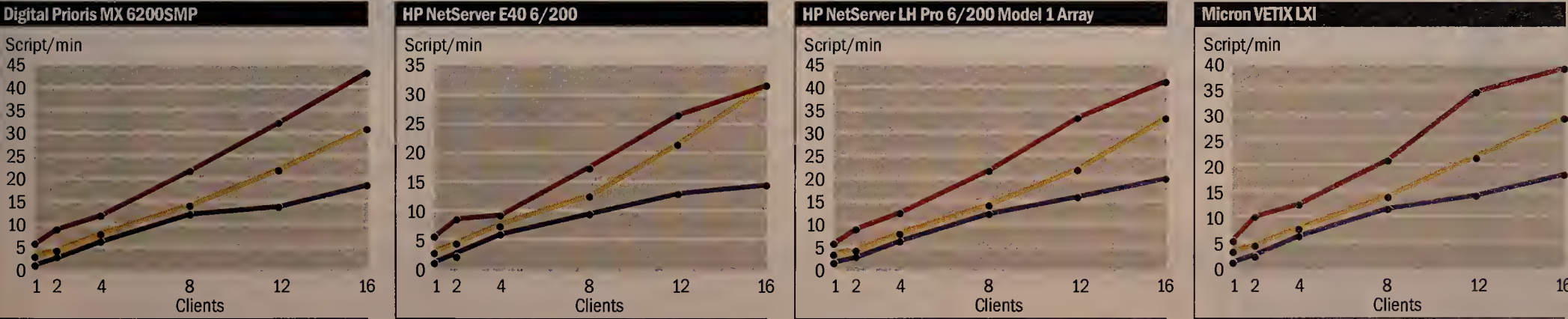


WORKGROUP SERVERS: THE INSIDE STORY

	Digital Equipment Corp.		Hewlett-Packard Co.		Hewlett-Packard Co.		Micron Electronics, Inc.	
Model	Prions MX 6200SMP		NetServer E40 6/200		NetServer LH Pro 6/200 Model 1 Array		VETIX LXI	
Processor	200-MHz Pentium with 512K-byte Level 2 cache		200-MHz Pentium Pro with 256K-byte Level 2 cache		200-MHz Pentium Pro with 256K-byte Level 2 cache		200-MHz Pentium Pro with 256K-byte Level 2 cache	
Max. processors	Dual 200-MHz Pentiums with 512K-byte Level 2 cache		200-MHz Pentium Pro with 512K-byte Level 2 cache		Dual 200-MHz Pentium Pros with 512K-byte Level 2 cache		Dual 200-MHz Pentium Pros with 512K-byte Level 2 cache	
Memory	As tested	Maximum	As tested	Maximum	As tested	Maximum	As tested	Maximum
	64M bytes	1G byte	64M bytes	384M bytes	64M bytes	1G byte	64M bytes	1G byte
Slots	Provided	Open	Provided	Open	Provided	Open	Provided	Open
	EISA	4	4	0	4	4	0	0
Shared	0	0	2	2	0	0	2	2
	ISA	1	1	2	1	1	1	1
PCI	2	2	2	1	4	2	5	5
	Processor	0	0	0	0	0	0	0
Bays	Provided	Open	Provided	Open	Provided	Open	Provided	Open
	Internal	0	0	2	0	0	0	0
External	4	2	3	2	3	1	4	2
	Hot-plug	4	0	0	6	2	6	4
Storage	Integrated Adaptec 7880P		Adaptec AHA 2910		HP NetRAID with 4M-byte cache		Integrated Adaptec 7880P	
	Fast/Wide SCSI-3		Fast SCSI-2		Fast/Wide SCSI-2		Fast/Wide SCSI	
Capacity	8G bytes		4.2G bytes		8.4G bytes		4.2G bytes	
	Quantum XP32275J		HP D2077A		HP 2.1G bytes		Seagate ST32171W	
Maximum drive capacity	Internal	External	Internal	External	Internal	External	Internal	External
	36G bytes	63G bytes	16.8G bytes	63G bytes	54G bytes	63G bytes	27G bytes	None
CD-ROM	Toshiba XM-5701TA 12x SCSI		Hitachi CDR-7930 8x IDE		Toshiba XM-5401TA SCSI		Plextor PX-12CS 12X SCSI	
Network adapter	Integrated 10/100Base-T, 10Base-2, AUI		HP Desk Direct 10/100TX PCI LAN Adapter		HP 10/100TX PCI Ethernet Adapter		Integrated Intel 10/100 Ethernet PCI Adapter	
Fault-tolerance features	Standard hot-swappable drives, ECC memory, dual fans, optional RAID controller, optional Remote Server Manager for lights-out or out-of-band server recovery/diagnosis, integrated Intelligent Server Management and ServerWORKS Manager alerting, optional Digital Clusters for Windows NT		ECC memory, Automatic Server Recovery, optional tape backup, optional RAID 5 capable controller		Smart redundant power supply, hot-swappable disk drives, ECC memory, RAID 5 capable controller (tested at RAID 0), Automatic Server Restart, dual fans		None	
Security features	Quicklock BIOS password, diskette lockout, keyboard lockout, two key locks on chassis		BIOS passwords, server case lock, keyboard lock		BIOS passwords, keyboard lock, server case lock, server mode, enable/disable ports		Chassis lock, case intrusion detection (Intel LANDesk)	
Bundled software	ServerWORKS suite of manageability tools		HP NetServer Navigator, including: Configuration Assistant, Installation Assistant, Order Assistant. HP Support Anywhere, including: Auto Alert, Web Interface, Remote Console, Symantec's pcAnywhere 3.2		NetServer Navigator (bootable CD-ROM), including Configuration Advisor and Configuration Assistant, OpenView for Windows, Diagnostic Assistant		Preconfigured NT 4.0, Novell IntranetWare 4.11, Intel LANDesk	
Warranty and support	7x24 toll-free phone support, three-year on-site warranty standard				Two-year, next-business-day, on-site, options at a higher price		7X24, three-years parts, one-year on-site, five-years microprocessor and RAM, other options available	

PERFORMANCE SUMMARY

We measure performance from the client's point of view and report the time it takes to complete typical tasks. Our performance summary graphs show the results of each test in scripts per minute with the number of clients ranging from one to 16. Because the tests run faster than a real client could perform the operations, each of our test clients stresses the servers as much as several real users would.



FILE SERVER Our file server tests run scripts on ascending numbers of clients for four applications: Microsoft Word and Excel for Windows, Lotus 1-2-3 for Windows and Corel WordPerfect for Windows. The scripts perform file access operations such as opening, importing and saving files.

DATABASE Our client/server database test uses Microsoft Access on the front end and Oracle Server 7.3 on the back end. We perform various read and write operations on a three-table payroll management application.

WEB SERVER Our Web server test uses Netscape Enterprise Server 2.0 under Windows NT and Novell Web Server 2.51 under NetWare. We view pages containing text and graphics, and use Open Text's Livelink Search 7.0 to search a 1G-byte document database.

boot the floppy to run diagnostics. Booting the floppy gave us a simple DOS-based interface for running tests on the hardware.

HP offers HP Support Anywhere with the E40. This includes an alert program that warns of failure condi-

Hewlett-Packard Co.
NetServer E40 6/200

OVERALL SCORE	7
Performance (40%)	6
Features and flexibility (40%)	7
Management apps/features (10%)	9
Serviceability (10%)	9

Scores are based on a scale of 1-10. Percentages are the weight given to each category in determining the overall score.

tions on the server and provides suggestions on how to correct problems. Support Anywhere also includes an intuitive Web-based management program.

Our only complaint was it failed to see a second drive we installed on our Windows NT server after installing Support Anywhere.

There's also Remote Console, which allows users to access certain hardware functions, such as restarting the server, running diagnostics and even flashing the BIOS, through a standard modem.

Remote Console also supports pc-Anywhere — a copy of which is on the NetServer Navigator CD — for remote control of your server software. If you don't have a remote IT department to manage your E40, you can hire HP to do it. Support Anywhere alone may be worth the E40's estimated street price of \$4,010.

Of course, there's also NetServer Navigator to help you configure and install your server. We used it to set up Windows NT with Support Anywhere, and it worked flawlessly.

If the best performance is what you require, this probably isn't the machine for you.

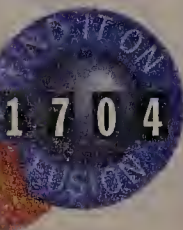
This is further emphasized by the installation program for IntranetWare for Small Business, which doesn't allow you to customize your installation for optimal performance.

The 5400 RPM HP drives are also slower than we've seen in most machines.

But if you need a low-cost, reliable server that's easy to configure and maintain, the NetServer E40 is an excellent choice.

Download complete server test results and more details about our test methodology.

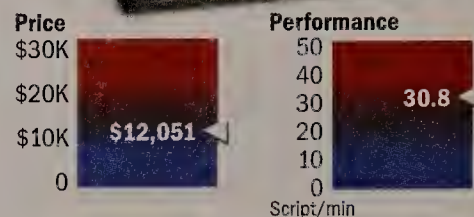
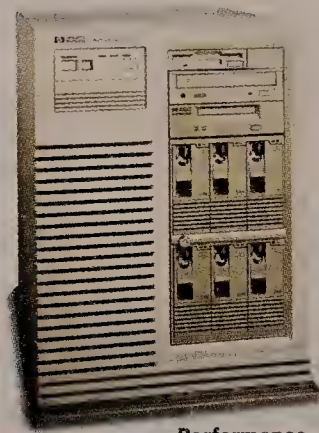
www.nwfusion.com



NetServer LH Pro 6/200 Model 1 Array

Vendor: Hewlett-Packard Co.

Contact: (800) 322-4772



Performance ratings are based on the results of file server, database and Web server tests at the 16-client level. For these workgroup servers, results are weighted according to the following percentages for each kind of test:

File server **35%**
Web server **35%**
Database **30%**

Last year, HP's high-end NetServer LH Pro was the fastest workgroup server tested with Version 1.0 of our benchmarks. With Version 2.0 of the benchmarks, the NetServer LH Pro 6/200 Model 1 Array is third to date in file server performance — following the Digital Prioris MX and the Compaq

Hewlett-Packard Co.
NetServer LH Pro 6/200 Model 1 Array

OVERALL SCORE	8
Performance (40%)	8
Features and flexibility (40%)	8
Management apps/features (10%)	8
Serviceability (10%)	8

Scores are based on a scale of 1-10. Percentages are the weight given to each category in determining the overall score.

ProLiant 800 — and second in NetWare database tasks. In all other tests, the NetServer performed well but not spectacularly.

At our request, HP included a RAID adapter configured at RAID 0 with a redundant power supply so we could see how well a high-reliability workgroup server performed. The adapter lets you add disks to your array without having to backup and restore your data. This adds to the reliability of the LH Pro, although it doesn't seem to do a lot for its performance.

The LH Pro is thoughtfully laid out for maintenance. HP puts a configuration label under the hood with a list of options and a new diagnostic diskette in a pouch. The card holding the processor and memory comes out when you remove a single screw. You can add a second processor in the

empty zero insertion force socket. With seven available slots, there's plenty of room for expansion, although only two additional hot-pluggable drives can be added. HP could do a little better getting the drive cables out of the way, but otherwise everything is easy to access.

The NetServer L series is probably best known for manageability. HP provides OpenView for server management along with NetServer Navigator and NetServer Assistant for setup and support, respectively. We took advantage of the Navigator to set up Windows NT and found it makes it easy to get the computer configured properly and the driver diskettes built.

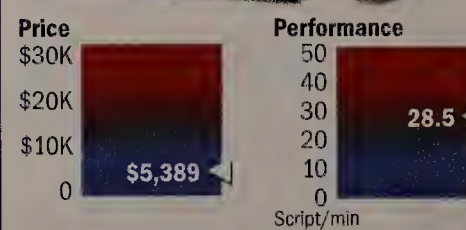
Our only complaint is that booting from the NT distribution CD-ROM made it impossible to properly configure the NetRAID volume. Instead, we had to boot from the setup diskettes — a tedious task.

This is not stellar performance for a \$12,051 machine, but taking into account its manageability and reliability, this server is an excellent buy.

VETIX LXI

Vendor: Micron Electronics

Contact: (888) 634-8799



Performance ratings are based on the results of file server, database and Web server tests at the 16-client level. For these workgroup servers, results are weighted according to the following percentages for each kind of test:

File server **35%**
Web server **35%**
Database **30%**

Micron Electronics, Inc. is relatively new to the server market, but its VETIX LXI shows the company is a

quick study; it has already improved upon the VETIX EL 1000 we reviewed in January.

The primary improvement is the incorporation of integrated adapters. Where the EL 1000 used up all of its PCI slots with adapter cards, the LXI includes an integrated Adaptec Corp. 7880P for Fast/Wide SCSI-2 perfor-

Micron Electronics, Inc.
VETIX LXI

OVERALL SCORE	7.2
Performance (40%)	7
Features and flexibility (40%)	7
Management apps/features (10%)	8
Serviceability (10%)	8

Scores are based on a scale of 1-10. Percentages are the weight given to each category in determining the overall score.

mance, an integrated Intel Corp. 10/100 Fast Ethernet Adapter and an integrated VGA adapter. This means we had all eight slots open for expansion.

Micron also added a second Seagate Technology, Inc. hard drive for improved performance. With it, the VETIX LXI scored third best to date in our Windows NT file server test.

The chassis is the same as the AST Research, Inc. Manhattan chassis we reviewed in February.

We might wish for a mounting bracket that doesn't require tools, but overall the VETIX LXI is easy to service. The configuration sticker on the bottom of the chassis won't win any prizes from novices, but it does explain motherboard jumpers adequately.

By far, the biggest improvement in Micron's server strategy is the inclusion of Intel's LANdesk Server software for server management, which allows management of critical server functions from any client on the network.

However, the adapter card that comes with LANdesk Server Manager Pro is not included, and without it you can't manage the server via modem.

Considering Micron's excellent reputation in the desktop market, and the VETIX LXI's \$5,389 price tag, this server deserves a close look.

THE LEADER BOARD — WORKGROUP SERVERS

Workgroup server	Issue tested	Performance rating	Overall score
HP NetServer LH Pro 6/200 Model 1 Array	This issue	30.8	8.0
Digital Prioris MX 6200SMP	This issue	30.7	8.0
Compaq ProLiant 800	1/13/97	34.5	7.9
HP NetServer LD Pro	1/13/97	29.2	7.6
Dell PowerEdge 2100/200	2/24/97	30.2	7.2
Micron VETIX LXI	This issue	28.5	7.2
HP NetServer E40 6/200	This issue	25.6	7.0
Koutech Goliath 1100 Application Server	3/31/97	30.4	6.9
AST Manhattan D6200	3/31/97	26.7	6.8
Micron VETIX EL 1000	1/13/97	24.8	6.0

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CTO, Cisco Systems

Keynote Speakers

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Chairman, President & CEO
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Briefs

■ **Novell, Inc.** is offering a course, **IntranetWare: Integrating Windows NT.**

The three-day course will teach Certified Novell Engineers and other users how to synchronize Windows NT user and group accounts with Novell Directory Services; use Windows NT tools and utilities; install and update the IntranetWare Client for Windows NT; manage a multiple-domain NT network; and install and configure the Novell Administrator for Windows NT.

The course costs \$1,019 and is available at participating Novell Education Centers and Novell Education Academic Partners.

© Novell: (800) 233-3382

■ **Netscape Communications Corp.** will hold an **Internet Developers Conference** June 11-13 in San Jose, Calif.

The agenda covers scripting and Web site development, applications services development, and site architecture and management. Participants can meet with Netscape executives and engineers.

The conference costs \$995 if you register before May 2; otherwise, the cost is \$1,195. Netscape DevEdge developer program members get a \$100 discount.

© Netscape: (888) 283-0687

New master's program weds technology and business skills

By Kathy Scott

The Keller Graduate School of Management has launched a Master of Telecommunications Management (MTM) program designed to help you combine network expertise and business skills.

Keller, based in Oakbrook Terrace, Ill., offers the part-time program at 16 of its 20 locations nationwide and plans to roll it out at the remaining four sites by next year, says Charles Koop, Keller's telecommunications program manager.

Keller joins a small group of other institutions, such as Golden Gate University, SUNY Institute of Technology at Utica/Rome, Texas A&M University at College Station, the University of Colorado at Boulder, and the University of Miami, in offering such a program.

"There is a [pressing] need for business managers who understand telecommunications principles," says Ray Sprong, vice president of operations at Network Diagnostic Clinic, Inc., a network management consulting and development company in Palatine, Ill.

Sprong says managers who advanced their careers along a

technical front often don't have strong business skills, while those with solid business acumen often rely on technical colleagues to make network systems decisions.

Keller's MTM program attempts to bridge the gap. "The main goal of the program is to break down the complex combination of factors that go into decision making on network and telecom technology in order to make those decisions more manageable," Koop says.

Keller's faculty is comprised of practicing professionals who teach real-world theory and applications. Students are also

communications fundamentals and basic data communications and networking.

Each course meets one night per week or on Saturday for 10 weeks. Students build a business foundation in three courses covering accounting and finance, organizational behavior and managing organizational change.

Management and technology skills are honed in six courses that cover information systems in management, management decision making, strategic management of technology, systems analysis, project estimating and control, and contract and procurement management.

Students finish up with a course that requires them to develop, design and justify real-world projects.

If you've got a bachelor's degree in liberal arts or engineering and have worked for at least two years in high tech, an MTM from Keller or one of the other schools might be the jump start your career needs, says Peter Nilsson, project manager in the advanced intelligent network unit at BellSouth in

Learn more about Keller's MTM program and those at other schools. Also get a listing of online telecom tutorials from the International Engineering Consortium.

NetworkWorld

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KELLER'S SCHOOLHOUSE SITES

The Keller Graduate School of Management offers its Master of Telecommunications Management in these cities:

Currently:

- ▶ Mesa, Ariz.
- ▶ Phoenix
- ▶ Long Beach, Calif.
- ▶ Pomona, Calif.
- ▶ Atlanta
- ▶ Decatur, Ga.
- ▶ Downtown Chicago
- ▶ Downer's Grove, Ill.
- ▶ Elgin, Ill.
- ▶ Lincolnshire, Ill.
- ▶ Oakbrook Terrace, Ill.
- ▶ Orland Park, Ill.
- ▶ Schaumburg, Ill.
- ▶ Downtown Kansas City, Mo.
- ▶ South Kansas City, Mo.
- ▶ Irvine, Calif.

By this fall:

- ▶ St. Louis

By next year:

- ▶ McLean, Va.
- ▶ Milwaukee
- ▶ Waukesha, Wisc.

Atlanta. He ought to know.

Nilsson's undergraduate degree in economics, experience in computer sales and an MTM from the University of Miami helped him land his current position and won him appointment to the advisory board that helped develop and evaluate Keller's program. Nilsson also teaches at Keller's Atlanta-Decatur campus.

© Keller: (630) 574-1960

NETWORK BOOK REPORT

Oracle How-To

Edward Honour (Corte Madera, Calif., Waite Group Press) 782 pp., \$49.99. Phone: (800) 368-9369; ISBN: 1-57169-048-4.

Application developers and database administrators who use Oracle Corp.'s Relational Database Management System can get help solving real-world problems with this book.

Each of the 20 chapters covers part of the database and its tools, such as SQL Plus, user accounts, security, manipulating and querying data, database triggers and building Web applications with Oracle WebServer. Also included is a CD-ROM containing a Java-to-Web-server conversion utility and latest trial versions of Oracle's WebServer, PowerBrowser

and Personal Oracle7.

A Journey Through Oz: The Business Leaders' Road Map to Tracking Information Technology Assets

Chris Jesse (Fuquay-Varina, N.C., Research Triangle Publishing, Inc.) 151 pp., \$24.95. Phone: (919) 557-0040; ISBN: 1-884570-65-8.

The underlying premise of this book is that companies must proactively manage their distributed IT resources if they are going to succeed in a competitive global economy. The author uses a light-hearted, conversational style to walk chief information officers and other business leaders through the process of choosing the right asset tracking system. Jesse helps you with common challenges

associated with this choice, such as IT asset planning, the cost of software upgrades, theft of IT assets, employee productivity, cost of end-user support and reconciling IT assets with a fixed asset accounting system.

The last chapter outlines a process to help you evaluate and implement an asset tracking strategy.

How to Handle Internet Electronic Commerce Security: Risks, Controls & Product Guide

Charles Cresson Wood (Sausalito, Calif., Baseline Software, Inc.) 211 pp., \$495. Phone: (800) 829-9955; ISBN: 1-881585-03-4.

Network consultant Wood wrote this book to help systems designers, analysts

and managers speed the process of developing electronic commerce sites. He describes the type of risks you may face and how to choose the appropriate controls.

He also includes an extensive security vendor and product list.

In addition, the book tells you where to find standards, training, security and electronic commerce periodicals. It also provides a bibliography of related articles that can facilitate your security implementation.

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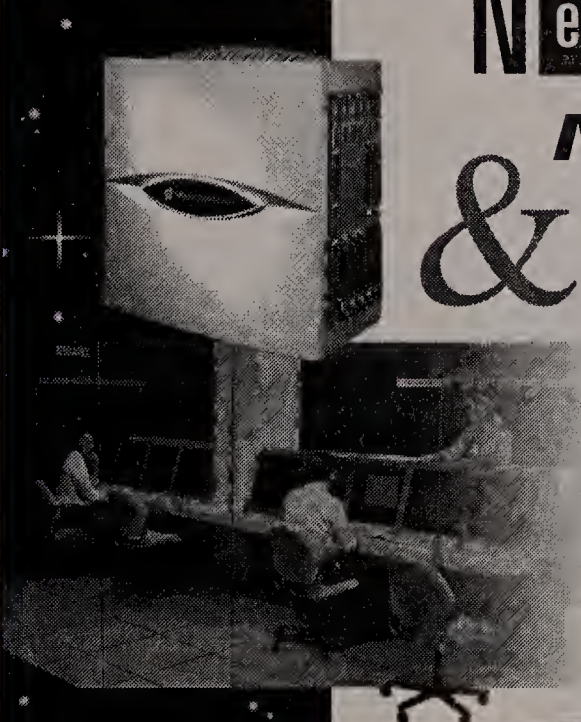
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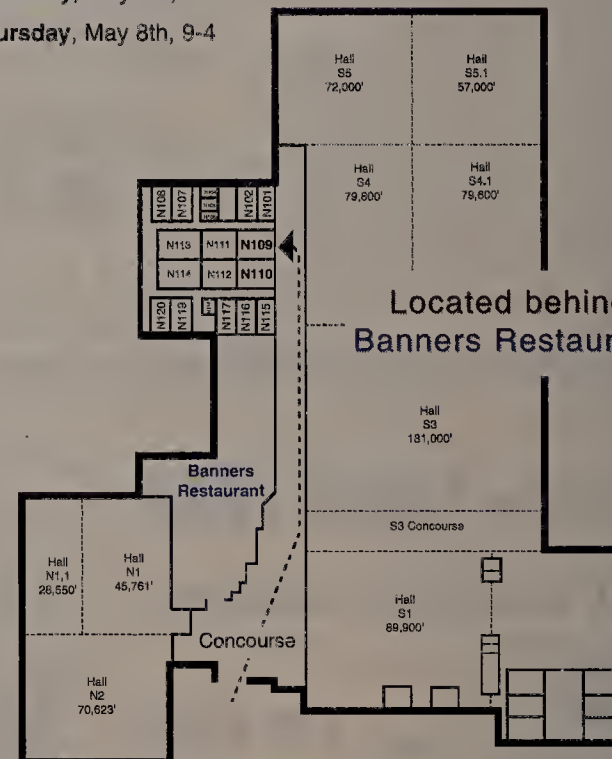
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- GTE - Fax: 972-718-3179; www.GTE.com
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- Deloitte & Touche - www.dtcg.com/networking/recruiting.htm
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SOFTWARE ENGINEER II. DUTIES: Provide support for hardware and Symmetrical Multi-Processing (SMP) software for engineers writing Application Programmer Interfaces (API's). Write tests for Network Loadable Modules (NLM) using SMP, API, C/C++ and Java. Setup and run large scale automated tests with several network topologies. Engineer solutions to issues involving distributed systems and hardware. Write technical documentation and reports on projects performed in SMP lab. Manage relationships with 3rd party partners and consult with internal engineering groups. Debug complex hardware driver and software problems. **REQUIREMENTS:** B.S. in Computer Science related field. Must know C/C++, UNIX, NetWare and UNIX networking. **SALARY:** \$49,000 per year. Send resumes to: JOB SERVICE, Attn: Pat Redington, E.S. Staff Services, 5th Floor, 140 E. 300 S., Salt Lake City, UT 84111. Job Order #3060346

Software Engineer. Design and develop Oracle client-server applications with Visual Basic, PowerBuilder, MS Access, ODBC, Visual C++ and C for business on-line transaction processes in a large distributed network. Port applications from Visual Basic to PowerBuilder and C. Develop installation of scripts for various software applications products using Install-SHIELD. Develop Web Pages which interact with databases using ISAPI in C, ODBC, and HTML. M.S. degree in Computer Science. 2 years of related experience in Oracle on-line transaction processes with Visual Basic and ODBC. **SALARY:** \$50,000.40hrs/wk. Apply at the Texas Workforce Commission, Dallas, Tx, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, TX 78701, JO# TX7857514, AD paid by an Equal Opportunity Employer.

SOFTWARE TEST ENGINEER II. DUTIES: Assure quality of IntranetWare file server installation and maintenance programs, including functionality, integration, performance, regression, reliability, security and usability. Analyze product requirements, design test cases, write test plans and specifications and develop and execute automated test cases using C/C++ and double byte localization testing techniques. Set up and monitor hardware, network and software configurations for a double byte lab environment. **REQUIREMENTS:** B.S. in Computer Science or Electrical Engineering and at least 2 years of experience in software testing or development using C & double byte. Must be familiar with C++ programming, low level PC hardware functions and localization testing of double byte software. **SALARY:** \$49,000 per year. Send resumes to: JOB SERVICE, Attn: Pat Redington, E.S. Staff Services, 5th Floor, 140 E. 300 S. Salt Lake City, UT 84111. Job Order #3060345.

Software Consultant. Provide services to clients in design & development of various business applications; design, develop, test & implement programs on Internal Bank Audits, Health Plan Insurance & Operations Pricing & Invoicing using COBOL, DB2, IMS, CICS, JCL & MVS on IBM3090 & Unix systems; implement complete life cycle of Oracle & Sybase development & conversion projects, converting systems from IMS to DB2 & VSAM to DB2; use IEF Case tool & Telon to automate analysis, to design & program functions & for code generations; write specifications & test plans; test & modify modules & provide user support & maintenance of customized software. \$52,880/yr. 40 hrs/wk. B.S. in Computer Sc. or Computer Eng., or Math & 2 yrs. exp. in job offered or 2 yrs. related exp. as System Analyst or Programmer Analyst to include use of noted skills in job duties. B.S. may be foreign equivalent degree. Submit resume to the GA Dept. of Labor, Job Order #GA6086915, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Dept. of Labor Field Service Office.

We are looking for a Programmer/Analyst to do the following: Analyze, design, develop, test, support and maintain engineering economics software systems, using windows NT 3.51, Windows95, UNIX, Sun OS, C, C++, SQL VB 3.0, Map Basic, MAPINFO, MS SDK, AutoCAD, Zapp, HTML Scripts, Foxpro, Dbase, MS Access 2.0, SQL Server 4.2, Oracle, Windows (16 & 32 bit) API, ODBC APR, Codebase API, MS Office, Wordperfect, Easycase. Hardware-IBM Microcomputers (80x86), Sun workstations, keyboard wedges and scanners. Must have experience in Novell, NT Networks and protocols TCP/IP, Netbeui, Concepts of OOD, OOPS, RDBMS, Case, Ole, NT-OS 3.51, SQL Server DB 4.2, VP 3.0. Must have administered SQL and Oracle databases and able to troubleshoot network problems. Education/Experience: Bachelor's Degree in Computer Science/Engineering and 2 years of experience as a Systems Analyst or Software Engineer. Special Requirements: Excellent oral and written communication skills. **Salary:** \$52,500 per year. **Work Schedule:** 40 hours/week 8:30 a.m.-5:30 p.m. Send 2 copies of your Resume to: Georgia Department of Labor, Job Order #6077626, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909, or the nearest Department of Labor Field Service Office. Must have proof of legal authority to work in the US.

Systems Consultant. Provide services relating to design & development of various business applications such as interface programs of Customer billing, manufacturing, sales & appliance service using Oracle, Pro/C, PL/SQL, C++, Triggers & C. Analyze systems using data modeling, process modeling & data integrity. Perform tuning, optimize queries & database & provide technical support. Develop & implement new strategic way of analyzing sales using Oracle & PL/SQL. Convert data with PL/SQL. Develop & generate MIS, membership & sales production reports using process modeling, data modeling & triggers with SQL*ReportWriter, PL/SQL, Pro/C, DEC C, C++, SQL*Forms, triggers & Unix. \$48,000.00/yr. 40 hrs/wk. M-F. B.S. in Computer Sc. or Computer Eng. or Electrical Eng. & 2 yrs exp. in job offered or 2 yrs related exp. as Systems Analyst or Programmer Analyst or Software Eng. to include use of noted skills in job duties. M.S. in noted disciplines & 1 yr. exp. is acceptable in lieu of B.S. & 2 yrs. exp. M.S. or B.S. may be foreign equivalent degree. Will work at unanticipated locations in the U.S. Send resume to GA Dept. of Labor, Job Order #GA6086759, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Dept. of Labor Field Service Office.

Software Consultant. Provide services relating to design & development of various business applications. Design & develop banking application to transmit & receive queries & check images using C-ISAM, C, DB2, JCL, UNISYS-U6000 & IBM RS6000. Write wrappers, unwrappers, binary data handlers (inbound & outbound) & Unix Shell Scripts. Develop, install, maintain & support application at client sites in PowerBuilder & Fox*Pro environments. Develop & upgrade ANSI EDI standards to support multi-threaded processes using Unix, C, and U6000. Develop routines on Microsoft Access with capability of being exported to Unix Machine via FTP & checking Syntax of data being transmitted. \$60,000.00/yr. 40 hrs/wk. M-F. B.S. in Electrical Eng., Computer Sc., or Computer Eng. & 2 yrs exp. in job offer or 2 yrs related exp. as Systems Analyst or Programmer Analyst or Software Eng. or Research Ass't (Computer Environment) to include use of noted skills in job duties. M.S. & 1 yr exp. Accepted in lieu of B.S. & 2 yrs exp. M.S. or B.S. may be foreign equivalent degree. Will work at unanticipated locations in the U.S. Send resume to GA Dept. of Labor, Job Order #6087278, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Dept. of Labor Field Service Office.

Software Developer. Design & dev. special software packages for US-TAX calculations, payroll & financial/accounting; dev. modules in C & C++ using IBM DB2 & port applications in IBM RS6000 & IBM OS/2 platforms; design & convert applications to run on MS-Windows using Open DataBase Connectivity & TCP/IP; dev. client-server version of applications & write server/client programs with C & C++ using various network protocols; dev. reports with C & SQL; provide technical support to clients & users. \$50,000/yr. 40hrs/wk. B.S. in Computer Sc., Computer Eng., Math, Statistics or Electrical/Electronics Eng. & 2 yrs. exp. in job offered or 2 yrs. related exp. as Sr. Systems Analyst, Programmer Analyst or Software Consultant to include use of skills in job duties. B.S. in other disciplines such as Physics, Chemistry or Geology acceptable with additional computer courses. B.S. may be foreign equivalent degree. Submit resume to the GA Dept. of Labor, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Dept. of Labor Field Service Office. Job Order #GA6082455.

Industrial Engineering Computer Based Training Manager: Coordination, development and design of Industrial Engineering Computer Based Training (CBT) systems for domestic and international work force in Language Authoring System (LAS), Computer Managed Instructions (CMI), TenCore, and Adroit systems with CBT tracking program. Training and development of the I.E. Skills Assessment System, and Information Library Systems and the Graphical Online Data Dictionary (GOLDD). Develop programs that load and update Oracle tables on the Sequent. Min. Req.: B.S. in Comp. Sci. or I.E. w/2 yrs. Exp. 40 hr/wk. \$50,400.00 per/yr. Send Resume to: Georgia Department of Labor, Job Order # GA 6096094 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office. EEO/AA Employer.

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The ideal candidate will have one year or more of in-depth Lotus Notes Systems Administration or previous experience as a Lotus Notes Administrator with Windows NT. The ability to assume ownership for the investigation and resolution to server problems. **Responsibilities** include software/hardware maintenance, upgrades for Notes servers and planning and recommending preventive maintenance for such.

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MVS SYSTEM PROGRAMMER

A minimum of 3 years experience installing, maintaining, supporting and migrating MVS operating system software in a multi-LPAR environment is required for this position. The ideal candidate will have a strong understanding of the MVS operating system and associated system software, including SMP/E, ISPF and MVS utilities. Experience with OS/390, MVS Open Edition and Unix is a strong plus. **(Ref Code: 12AT-MVS)**

PRODUCT MANAGEMENT - SUPERVISOR

The Product Management Supervisor will be responsible for determining the information system requirements of our firmwide customers, ensuring that the requirements are met and communicating new system functionality to be included in new releases of software to firmwide customers. Further responsibilities include coordinating and supporting the deployment of new applications and technologies, working effectively with all levels of personnel and supervising 2-4 employees.

Position Requirements: a **minimum** of six years post-college work experience with at least two years at the supervisory level, outstanding customer service and supervisory skills, diplomacy, assertiveness and confidence. Additional requirements: Project Management experience including the ability to quickly grasp technical and functional issues, prioritize tasks and delegate accordingly, and accurately evaluate the criticality of problems and adjust priorities as appropriate. Knowledge of accounting and/or financial applications in mainframe/LAN-based environment is a plus and experience with a majority of the following technologies is desired: IBM DB2, MS Access, SQL (Structured Query Language) and client/server, Distributed Database and Relational Database concepts. **(Ref Code: 12AT-UDAPM)**

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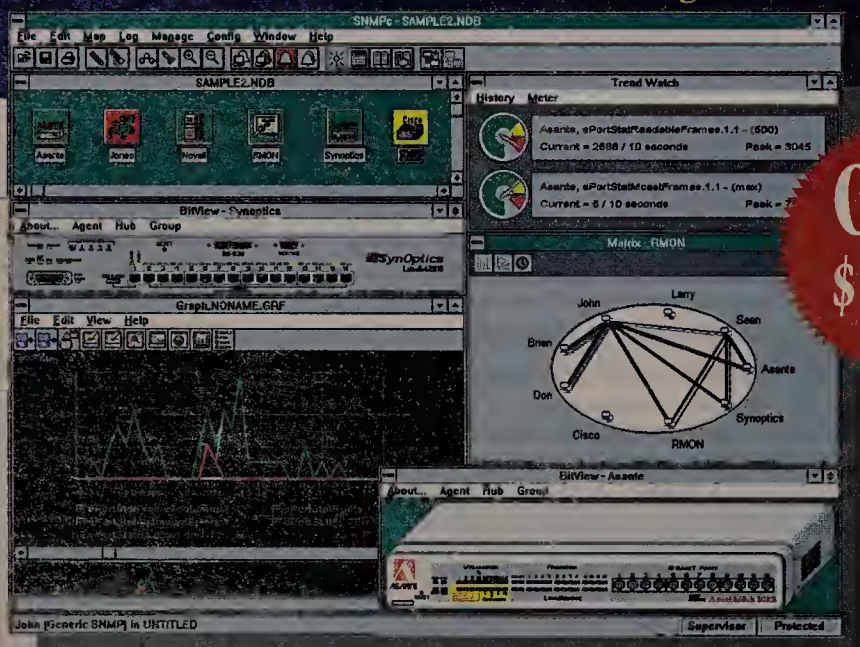
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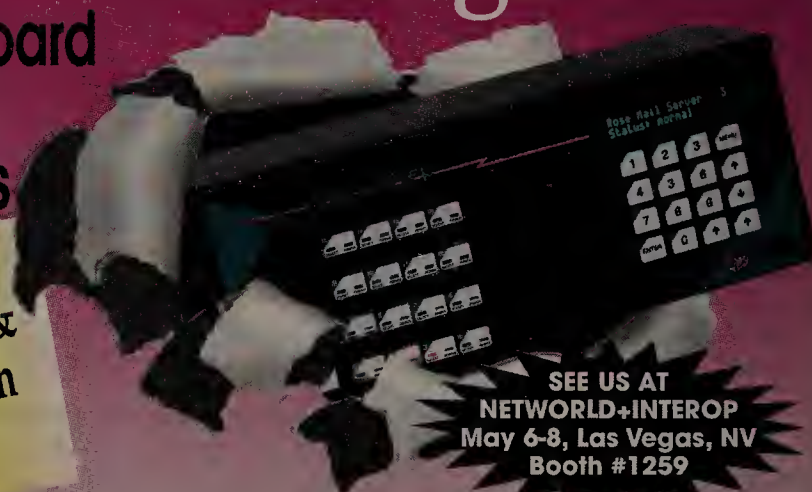
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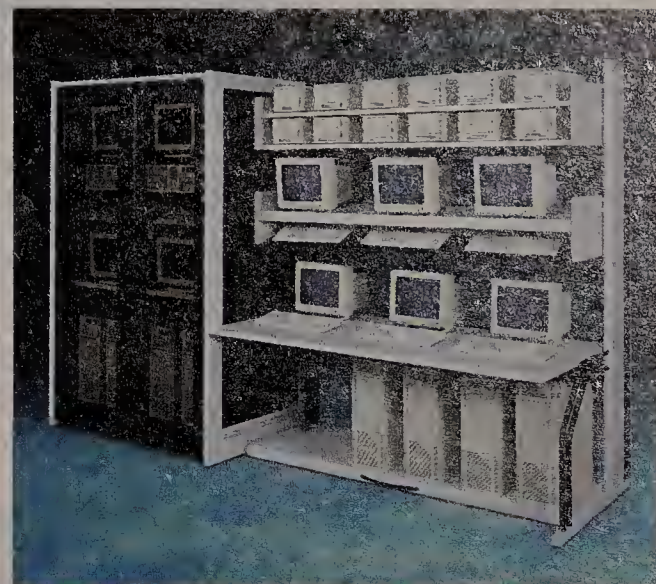
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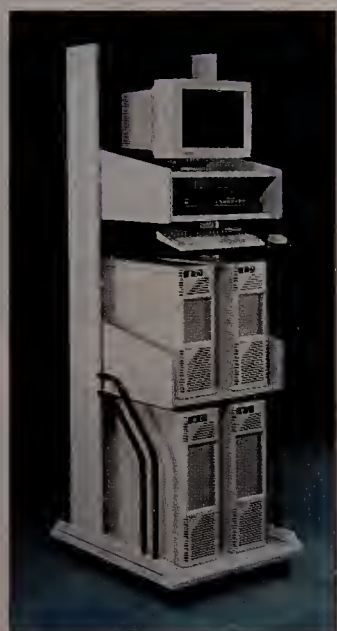
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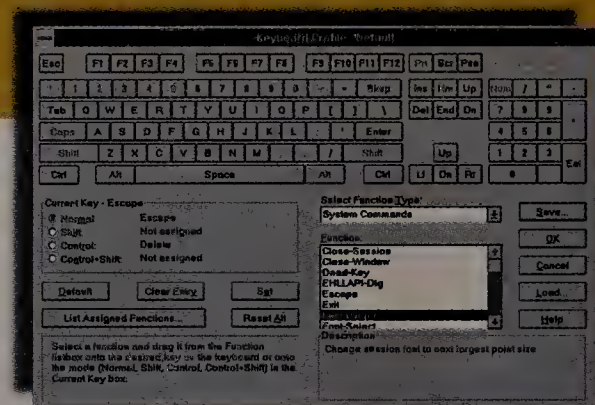
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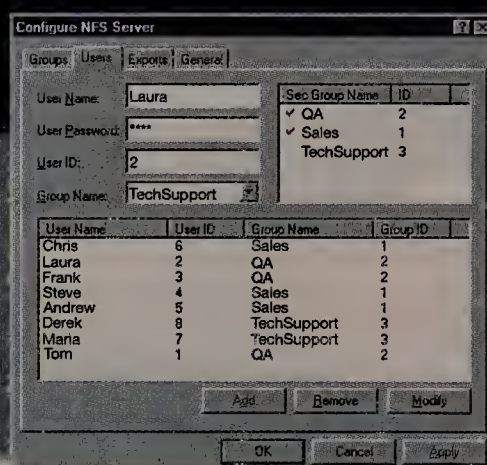
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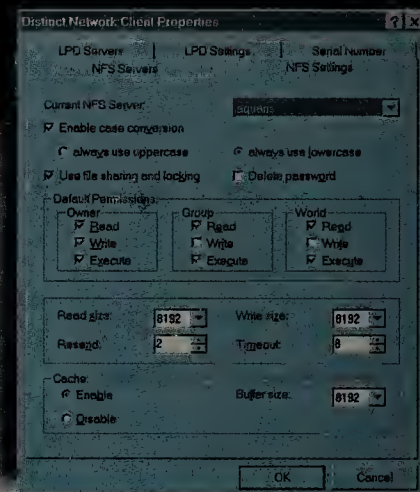
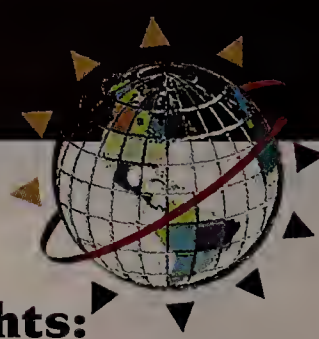
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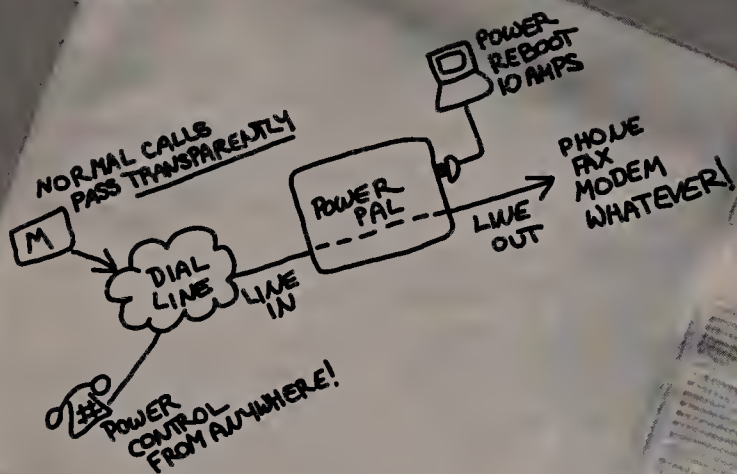
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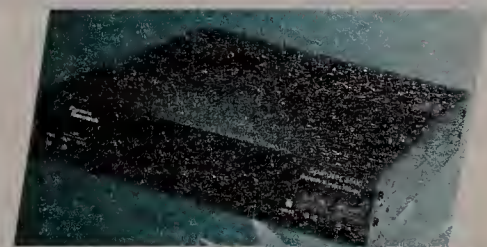
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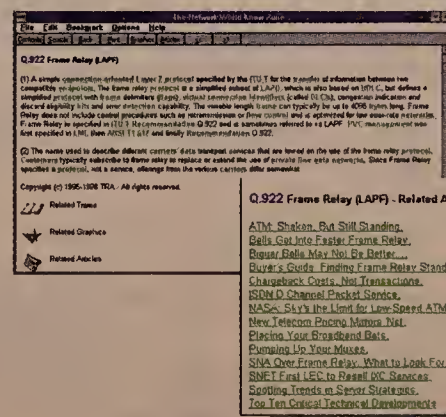
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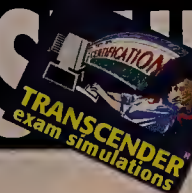
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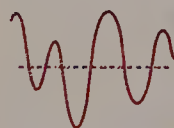
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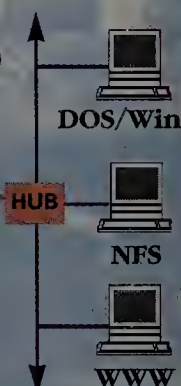


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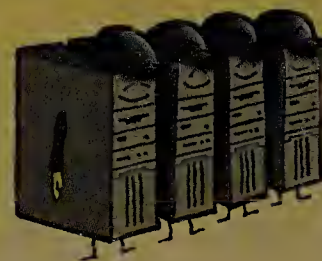
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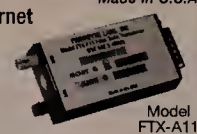
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Aimee Damiani, Sales Assistant

Donna Pomponi, Senior District Manager

Nancy Robinson, Senior District Manager

Michael Eadie, Account Executive

Internet: tdavis, dpomponi, nancyr, meadie@nww.com

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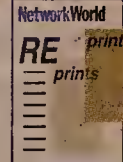
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Chair, Michael Howard, *Infonetics Research Inc.*

Tuesday, May 6 • 10:15 am–11:45 am

How can you evolve your intranet from simple publishing to full application development platforms with either Netscape ONE or Microsoft Active Platform? Learn to dramatically reduce the costs of developing, deploying and maintaining applications based on open standards including HTML, JavaScript, VB Script, Java and ActiveX.

Remote Access—Extending the Network to the Edge

Chair, Val Sribar, *Meta Group Inc.*

Tuesday, May 6 • 4:00 pm–5:30 pm

Need to unify diverse applications and traffic types at remote network locations over a single access facility into the WAN? The intelligent remote access device which supports router-based LAN traffic, Video, POTS or data over ISDN, Frame Relay or ATM is emerging as a cost efficient way to provide integrated carrier services. Examine the issues and possibilities.

Evolution of Broadband Access Technologies and Systems

Chair, Dr. David A. Kettler, *BellSouth Communications*

Wednesday, May 7 • 1:30 pm–6:00 pm—Double Session

Consider challenges associated with various shared-media architectural alternatives for delivering advanced broadband multimedia services to residential and business subscribers. Wade through the maze of residential broadband access options with this panel of world-class experts representing independent research/academic institutions, MSO/LEC equipment vendors and service providers.

Competitive Access Providers—The MAN Alternative

Chair, Gerald Ryan, *Connections Telecommunications Inc.*

Thursday, May 8 • 10:15 am–11:45 am

CAPs are positioning themselves to offer cost effective services well beyond the provisioning of bypass access to interexchange carriers. Discover CAPs' key advantages. Examine the technical issues, the pros and cons of their services, cost tradeoffs and implementation concerns.

1-Day Workshops

Internet and Intranet Security Design and Management

Marcus Ranum, *V-ONE Corporation*

Wednesday, May 7 • 9:00 am–5:00 pm

Don't unwittingly accept substantial security risks! Firewalls help, but must be combined with good site security practices. Get a technical overview of security design and maintenance techniques to protect your business in the highly networked future. Discuss risk assessment, security policies and procedures, security solution design and selection, auditing and incident response.

IPv6 Transition Planning

Robert E. Gilligan, *FreeGate Corporation*

Thursday, May 8 • 9:00 am–5:00 pm

Faced with integrating IPv6 products into your existing IP network? Explore the special mechanisms that have been designed into IPv6 to simplify transition and look at the various transition alternatives available to small and large Internet and intranet sites. Specific transition plans will be shared that can be customized to individual requirements.

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Dr. David Clark, *MIT*

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Dr. Raj Jain, *Ohio State University*

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Discuss trends and consider hotly debated new developments and technical issues such as multimedia, wireless LANs and WANs, IPng, and residential broadband. This tutorial is designed as a technical overview of recent advances in networking for attendees who do not have time to take individual tutorials on each topic.

ATM and IP: Theory and Practice

Dr. Douglas E. Comer, *Purdue University*

Dr. Paul V. Mockapetris, *Software.Com*

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Survey the two most promising networking technologies for the next decade, learn their strengths and weaknesses, and explore ways IP and ATM can be integrated. The course examines the likely future as IP evolves to version 6, as more of the ATM promise is realized, and as alternatives such as Fast Ethernet and direct access to SONET evolve.

Internet Multicast and Multimedia Technologies: The Mbone, RTP and RSVP

Dr. Steve Deering, *Cisco Systems*

Dr. Deborah Estrin, *USC*

Dr. Lixia Zhang, *UCLA*

Thursday–Friday, May 8–9 • 9:00 am–5:00 pm

Discuss the creation, operation and application of the Mbone and the underlying protocol technologies which have further evolved due to the Mbone's rapid growth. Examine the future of Internet architecture and protocols including the forthcoming resource reservation protocol, RSVP, the proposed multicast routing protocol, PIM, and a new, highly scalable protocol for reliable multicast, SRM.

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Spam

Continued from page 1

just choose an ISP to start the spam from ... they would probably choose a corporation," said Paul Hoffman, the IMC's director. "An ISP would understand what's going on better and would probably be able to throw away the messages faster."

While unaware of specific corporate victims, Hoffman said network managers should examine the risk. This is primarily to save themselves grief, but also to guard against more serious consequences for their employers.

Bob Stull, director of network operations at Global Net International, Inc., an ISP in Augusta, Ga., has experienced the problem first-hand.

"When these companies that specialize in spamming the world use your site [for launching messages], you're the one who gets blamed," Stull said.

"If somebody is a little knowledgeable and wants to look back through the [message] headers, they can see that [the spam] didn't originate with you. But most people don't [do that], they just say, 'You're a bad guy,'" he said.

would-be relay-spammers, primarily by checking the address of an incoming submission against a database of the server's registered users.

If the sender or one of their requested addressees is not listed, the E-mail is not transmitted.

As for a standards-based solution, the IMC's Hoffman said a fifth draft of a pro-

posal that would extend SMTP has been submitted to the Internet Engineering Task Force.

The SMTP extension would allow for separation of the submission and transmission functions on an E-mail server, "so that the submission server can be more careful," he said.

Hoffman is also looking for the law to

lend a hand against spam.

"People are getting away with [relay-spamming] now, but I'm sure there is going to be a test case at some point," he said.

"Hopefully, a judge will come up with the really simple conclusion that the medium doesn't matter, this is fraud," Hoffman said. ■

HOW TO KEEP YOUR E-MAIL SYSTEM SAFE FROM SPAMMERS

- ▶ Know the enemy. If E-mail server log files go unread, resource-sapping spammers can operate with impunity.
- ▶ Program all but one E-mail server at your company to reject requests to forward messages. Have only that one server screen IP addresses carefully.
- ▶ Keep all E-mail servers that can accept requests to forward messages inside your firewall.
- ▶ Watch for better solutions from E-mail and firewall vendors as well as SMTP security extensions. All are expected soon.

They do more than bad-mouth you, too. Stull's ISP has been blackballed from sites whose operators falsely accused it of harboring spammers.

As a result, Global Net's clients, some of whom depend on full Internet access for their livelihoods, were stymied and angered.

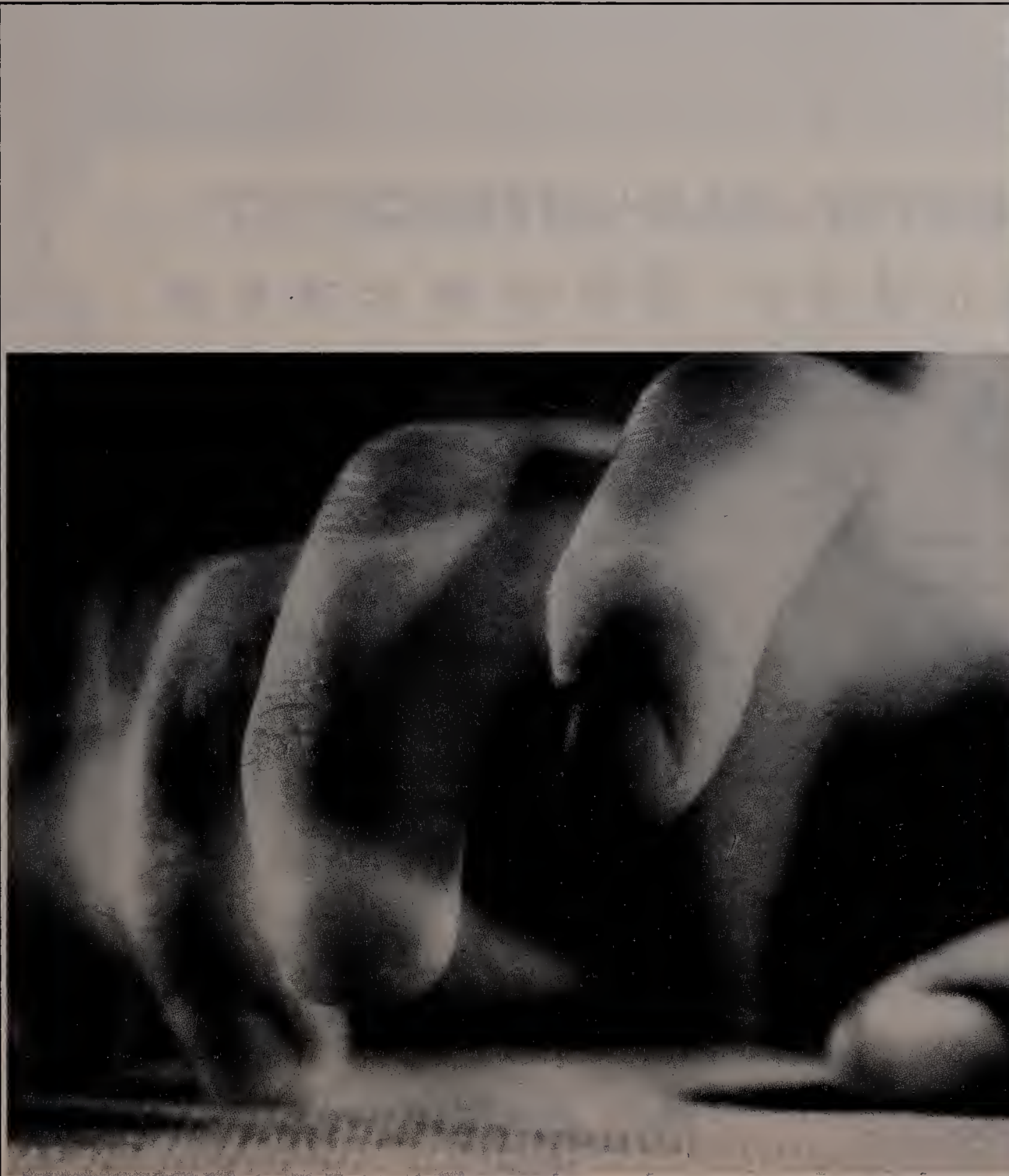
Undoing the damage from one such episode cost Stull 20 hours of work, he said. Moreover, this relay-spamming can clog up a network for legitimate users by overwhelming the E-mail server.

"For people popping in to check their mail, it's really slow," Stull said. "In fact, when you're talking about the Web sites, sometimes things can time out, especially if you're dialing in from a 28.8 line somewhere."

Part of the problem stems from the fact that tapping into an organization's SMTP server is not difficult.

"Anybody can actually do it," said John Junod, chief technology officer at Ipswitch. "You only have to know seven or eight different commands to the SMTP server to be able to deliver a message."

Version 4.0 of Ipswitch's IMail Server for Windows NT promises to ward off



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Netscape shows sizzle with earnings, new partnership

By Niall McKay and Torsten Busse
Mountain View, Calif.

Netscape Communications Corp. was busy last week announcing that its first-quarter earnings more than doubled and that the company would integrate its

object-oriented programming tools with products from Forte Software, Inc.

Netscape's stock gained \$2.50 Wednesday after the company reported first-quarter earnings of \$7.9 million, or 9 cents per share — more than double the \$3.6 mil-

lion, or 4 cents per share, reported for the same period last year.

Following the announcement, Netscape's stock closed at \$27.50 on the NASDAQ stock market.

In the earnings report, revenue for the

quarter, ended March 28, was \$120.2 million, a 114% increase from the \$56.1 million for the same quarter last year, traditionally the slowest for most technology companies.

"Clearly, we have had another very active quarter," said Jim Barksdale, Netscape president and CEO. "We are continuing to gain new customers, and over 15 products were upgraded or moved into beta this quarter."

The company has continued to broaden its product base and expand its services offerings, which accounted for 25% of revenue, compared with 16% last year, officials said.

Netscape's Communicator Web browser, or client technology, accounted for 38% of revenue vs. 51% last year. Its server business accounted for 37%, compared to 33% a year ago.

With the Forte deal, Netscape hopes to make it easier and faster for developers to build distributed, Internet-enabled applications. Specifically, the two companies will focus on establishing a link between Forte's Application Environment and Netscape's Visual JavaScript, using the Internet Inter-ORB Protocol (IIOP) interface.

The IIOP is part of the Object Management Group's Common Object Request Broker Architecture. IIOP governs communication among ORBs over the 'Net.

Forte's Application Environment is an integrated set of object-oriented tools for building, deploying and managing distributed applications, company officials said.

Visual JavaScript is a programming tool that lets enterprise developers rapidly build intranet and extranet applications without writing software code, Netscape said.

A timetable for completing integration of the programming tools has not been determined yet.

McKay and Busse are correspondents with the IDG News Service in San Francisco.

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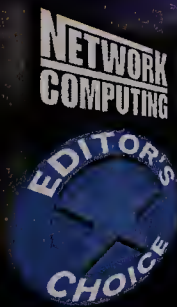
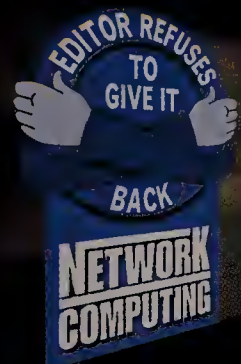


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- During the Switching Showdown at Comnet '97, Cabletron garnered over 50% of the vote in a *Network World* audience poll.
- For the second year in a row, *Network Magazine* (formerly *LAN Magazine*) awarded Cabletron's SPECTRUM enterprise management solution its 1997 Product of the Year in the category of Management Platform.
- In WAN switching, Cabletron's FRX4000 frame relay solution from CSI Netlink won the annual "Tester's Choice" award handed out by *Data Communications*.

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Some of Murphy's Laws:

Murphy's Third Law: Whatever can go wrong will go wrong.

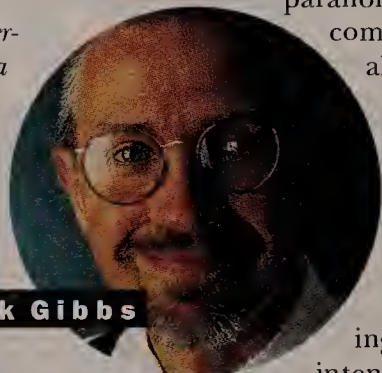
Murphy's Fourth Law: If several things can possibly go wrong, the one that will cause the most damage will be the one to go wrong.

Murphy's Fifth Law: If anything just cannot go wrong, it will anyway.

Murphy's Sixth Law: If you perceive four possible ways in which a procedure can go wrong and circumvent these, a fifth way — unprepared for — will promptly develop.

My good friend Mr. Jim Sterne sent me the following E-mail signature block (sig) he received from Ms. Mellanie Hills who, in turn, received it from someone at some company that shall remain anonymous.

Mark Gibbs



very rare.

The next way Murphy can get involved is for the Domain Naming System (DNS) server, used to resolve the IP address of the recipient's SMTP server, to lie. This usually happens because someone made a mistake in configuring the DNS server, but if you are paranoid (and intend to have secure computer systems, you should always be so), consider the possibility of subversion.

If someone has access to the DNS server you use, it isn't hard for that person to simply arrange for a bogus SMTP server to copy your E-mail while transparently passing the messages to the intended SMTP server.

Of course, it is human error that gives us the most likely reason for wandering messages. For example, I receive no end of E-mail for people at Gibbs Die and Casting. That company's domain is gibbsdc.com and mine is gibbs.com. I now have insight into that business and I don't care!

But back to our Worst Sig of the Year contender: Isn't this approach to E-mail a little like choosing to send your private messages on postcards through the regular mail?

If these guys were thinking clearly, they wouldn't allow for the possibility of mis-

The icing on this sig is the request to notify them by telephone! Carrier pigeon might be a better alternative.

routed E-mail revealing anything to a third party. If they think their messages are really important, they should encrypt end to end and ensure they have receipt-and-read notification with verifiable nonrepudiation.

Today, wandering messages are not uncommon but usually not a big deal, either. Tomorrow, well, just remember Murphy's Seventh Law: Left to themselves, things tend to go from bad to worse.

Message me securely at nwcolumn@gibbs.com or voice-mail me at (800) 622-1108, Ext. 504. Cap'n! The BS generators, they canna take nae more! We'll have to obey the laws of physics!

* Let me know if you have found something worse.



'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

EVEN MICHAEL JACKSON AND LISA MARIE PRESLEY LASTED LONGER THAN THIS It was a marriage made in New York's Silicon Alley. On one side of the altar, the young, sexy online music entertainment content start-up; on the other, the stable, gray business database vendor.

You just knew the old guy would get the boot.

The start-up, **N2K, Inc.**, last week announced that it is dropping its Telebase division, which offers business information services on the World-Wide Web and via commercial online services such as **CompuServe, Inc.** and **Prodigy Services Co.** N2K merged in February 1996 with **Telebase Systems, Inc.**, which was founded in 1984.

Explaining the decision to end the short-lived union, N2K President **Jim Coane** noted that "N2K is aimed clearly at the entertainment industry, while Telebase focuses squarely on the business information consumer."

Didn't their parents tell them that very thing a year ago?

The split underscores the growing pressure on Internet content development start-ups to turn a profit. Many of these companies are running out of money, and their investors are running out of patience.

Nowhere is this pressure felt more than in content-crazy Silicon Alley, which is filled with black-clad inhabitants who like to sneer at those grubby — and rich — software developers on the West Coast.

Wiser from the experience, N2K and Telebase part as friends, free to focus on their core businesses.

Now if only they could get those tattoos removed.

HOW DO YOU SAY "ACCESS DENIED" IN GERMAN? As far as advocates for free speech on the Internet are concerned, **Germany** quickly is becoming Censorship Central.

Rights groups are protesting two recent moves by the German government to limit the availability of online content. In one case, a top **CompuServe** official was indicted on charges that the service allowed access to newsgroups and Web sites containing sexually explicit pictures, and games with Nazi symbols.

In the second incident, Internet service provider **German Research Net** bowed to government pressure by blocking access for several days to a Dutch Web server that hosts text with tips on how to sabotage the railways. According to the **Global Internet Liberty Campaign**, officials of the ISP were threatened with charges of aiding and abetting criminal activity if it did not prevent online distribution of the text from **RADIKAL** magazine, which is outlawed in Germany.

The German government currently is considering legislation to regulate the Internet. The bill would require ISPs to block content that German prosecutors designate as illegal.

A FEW ZEROS HERE, A FEW ZEROS THERE A Boston-area ISP last week admitted it faces three lawsuits alleging it submitted false and misleading information in a filing for an initial public offering (IPO).

WebSecure, Inc. of Saugus, Mass., filed for an IPO last September and went public in November at more than \$15 a share. Today, shares cost less than \$2.

The company offers Internet access and support services for secure online commercial transactions.

WebSecure announced it is revising revenue figures downward for the last quarter of 1996 and the first quarter of 1997. It reported an operating loss for the second quarter, which ended Feb. 28.

The company earlier this month fired President and CEO **Tibor Vais**. Presumably, the firing was done by WebSecure Chairman **Carroll Lowenstein**, who has just been indicted for allegedly failing to file state income tax returns.

Oddly enough, none of this information is available at www.websecure.com. It must be an oversight.

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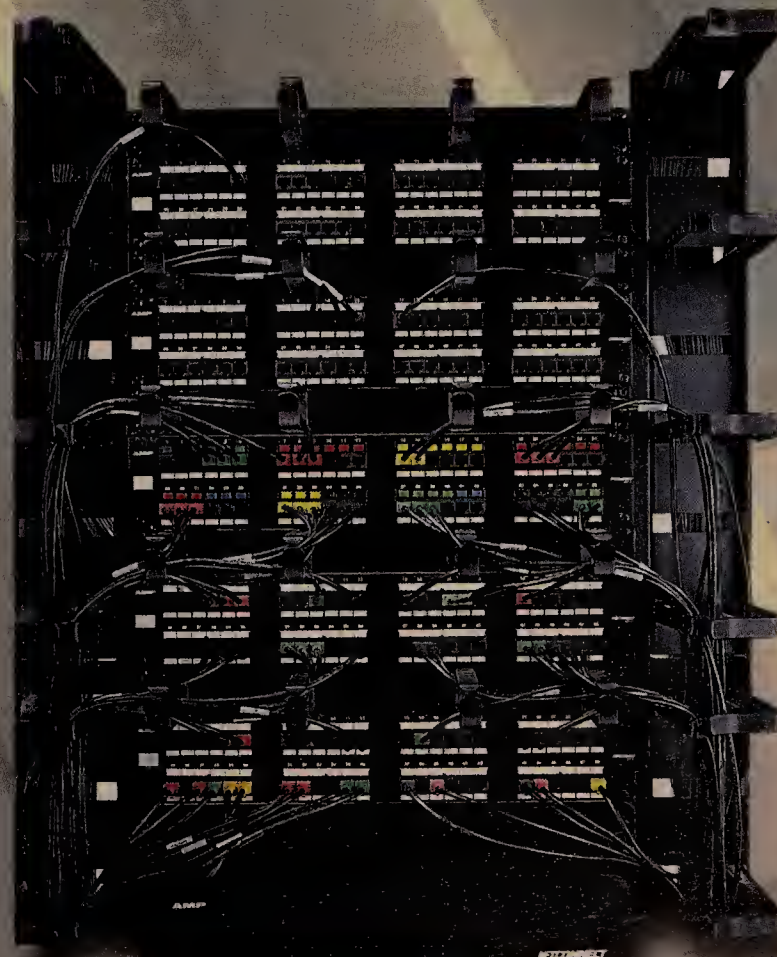
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1. RemoteServ/IS*. (ri-mōt'-sūr'vis) That's what it does.
2. Of course it's fast. Betcha it's faster than whatever you're using for dialup...
and my dad can whip your dad, so there.
3. About 80 pounds.
4. Sure, it's multiuser. Yes, it's multiprocessor and yes, it has multimodemms.
No, it's not multicolored, that's Dennis Rodman's trip.
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9. Yeah, it looks like our NT Server™, IntraNetWare™, and ReachOut™ systems,
but it's way different.
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They'll answer the rest of your questions.

**Hint: /IS stands for Integrated System. We were gonna name it LoadBalancedClusteredApplicationServer, but some German outfit already had it trademarked.*



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After careful analysis,
Patricia decided the
most efficient way to reach
her client's market was
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media buy.

Unfortunately, in doing so, she gave up the
chance to play a round in our competitor's
"Circus of the Media Stars Golf Classic."

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client would reach the most influential
audience of volume-buying IT profes-
sionals in the world.

There's Computerworld reaching
IS strategists and managers.
InfoWorld delivering enterprise-
wide product strategists, evaluators
and specifiers. And Network
World reaching enterprise
network designers, integrators
and infrastructure managers.

Patricia's brain started
clicking. Three leading
IT newsweeklies, and only 16%
readership duplication. An astounding
fact. Especially when she discovered
that IDG's closest competitor has
50% greater duplication
among their three enterprise
publications.*

Yes, this was
definitely the way to

extend her client's branding efforts
without painfully extending their budget.

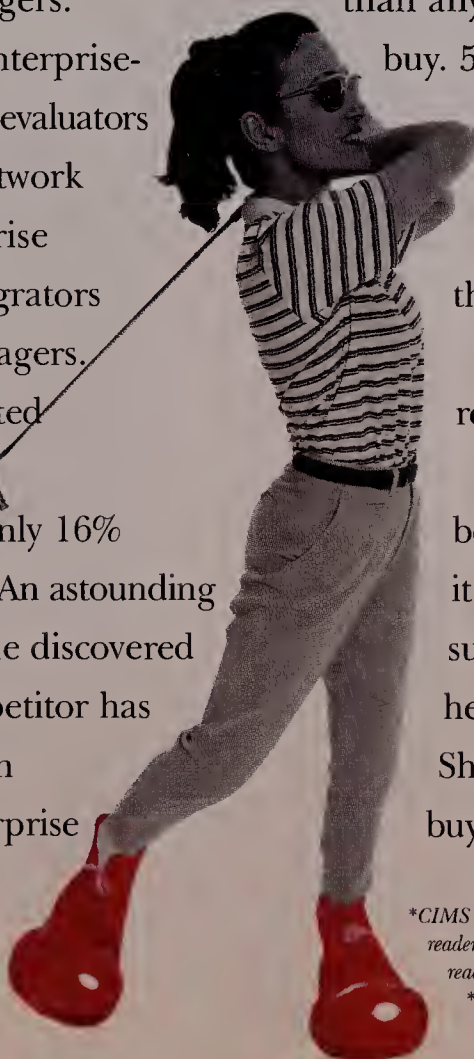
In a single week, she would
reach major IT influencers and get
greater penetration into the enterprise
than any other comparable media
buy. 540,000 unduplicated
subscribers and 1.8 million
total net readers.** Not to
mention extending her reach
through PC World and CIO.

All this plus the global
resources of IDG.

For Patricia, it was like a
beacon of divine light. (Okay,
it was nearly 6:00 am and the
sun was coming in through
her window.) But no matter.
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buy for her client.

*CIMS v3.0 IntelliQuest. IDG EnterpriseWorld: 16%
readership duplication, CMP Enterprise Group: 24%
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**IDG Corporate Database and CIMS v3.0 IntelliQuest



Source: CIMS v3.0 IntelliQuest, IDG=1x CW, IFW, NWW; CMP=1x IW, CWK, NC; ZD=1x PCW

High Value Enterprise Buyers

Corporate MIS, IS, IT+ ■ Authorize purchases+
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Net Reach

*In just one week, EnterpriseWorld's reach to high value enterprise buyers is 26%
stronger than CMP's enterprise group and 100% stronger than ZD's "one book" model.*

Source: CIMS v3.0 IntelliQuest, IDG=1x CW, IFW, NWW; CMP=1x IW, CWK, NC; ZD=1x PCW

IT Purchase Influencers

IDG 1.8 million

CMP 1.2 million

ZD 1.0 million

0-2 Million

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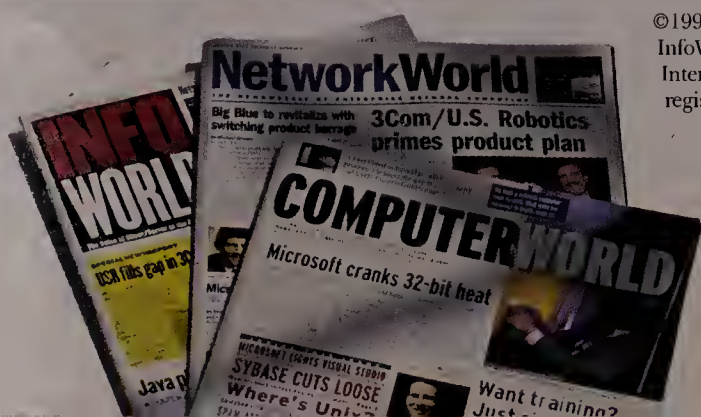
E N T E R P R I S E W O R L D

The steam from the coffee in Patricia's IDG mug swirled around her hair. She stared out the dew-covered window, clutched her robe a little tighter and smiled into the rising sun.

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